

10.5 Test Result

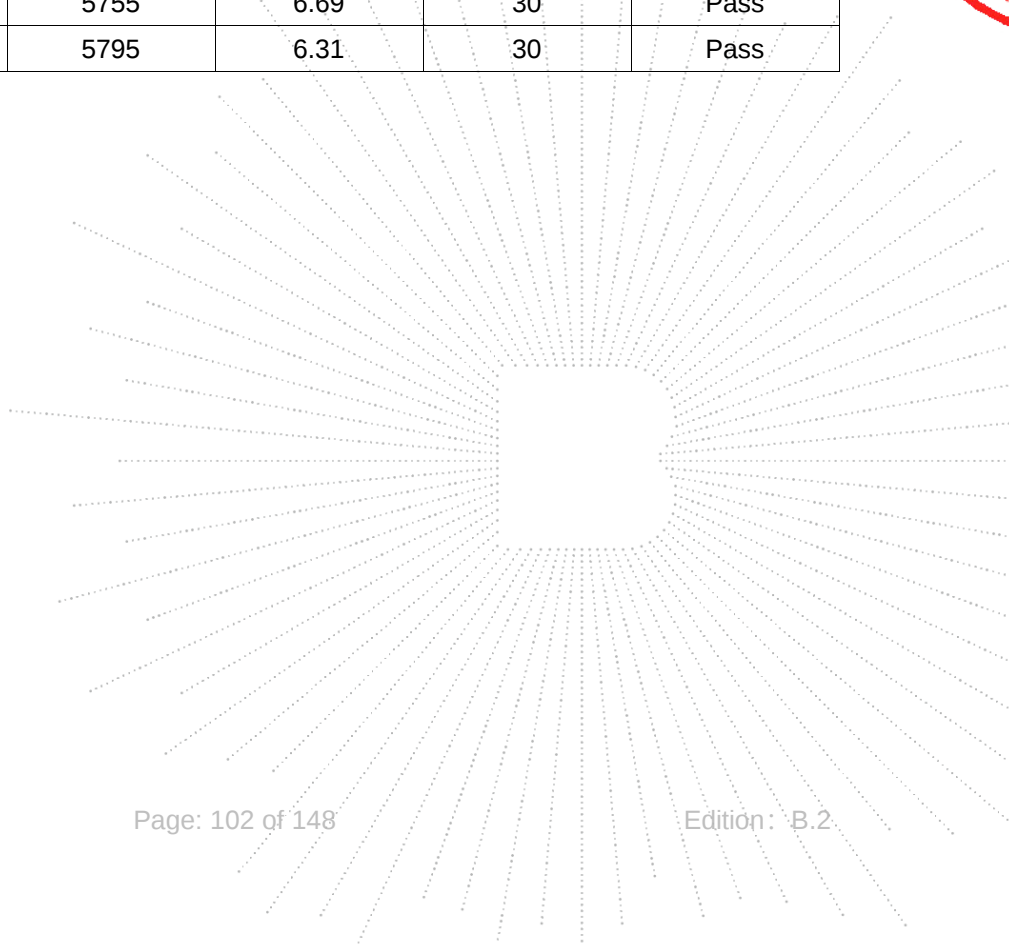
Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	10.74	24	Pass
NVNT	a	5200	9.87	24	Pass
NVNT	a	5240	10.61	24	Pass
NVNT	n20	5180	8.81	24	Pass
NVNT	n20	5200	8.57	24	Pass
NVNT	n20	5240	8.50	24	Pass
NVNT	n40	5190	6.22	24	Pass
NVNT	n40	5230	6.77	24	Pass
NVNT	ac20	5180	8.79	24	Pass
NVNT	ac20	5200	8.06	24	Pass
NVNT	ac20	5240	8.62	24	Pass
NVNT	ac40	5190	6.21	24	Pass
NVNT	ac40	5230	6.67	24	Pass
NVNT	ax20	5180	9.14	24	Pass
NVNT	ax20	5200	8.98	24	Pass
NVNT	ax20	5240	8.36	24	Pass
NVNT	ax40	5190	6.28	24	Pass
NVNT	ax40	5230	6.37	24	Pass

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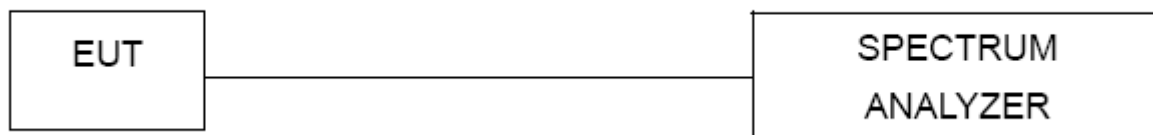
Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	11.19	30	Pass
NVNT	a	5785	10.95	30	Pass
NVNT	a	5825	10.69	30	Pass
NVNT	n20	5745	8.39	30	Pass
NVNT	n20	5785	7.93	30	Pass
NVNT	n20	5825	7.81	30	Pass
NVNT	n40	5755	6.74	30	Pass
NVNT	n40	5795	6.31	30	Pass
NVNT	ac20	5745	8.36	30	Pass
NVNT	ac20	5785	8.03	30	Pass
NVNT	ac20	5825	7.79	30	Pass
NVNT	ac40	5755	6.86	30	Pass
NVNT	ac40	5795	6.39	30	Pass
NVNT	ax20	5745	8.22	30	Pass
NVNT	ax20	5785	8.01	30	Pass
NVNT	ax20	5825	7.79	30	Pass
NVNT	ax40	5755	6.69	30	Pass
NVNT	ax40	5795	6.31	30	Pass



11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

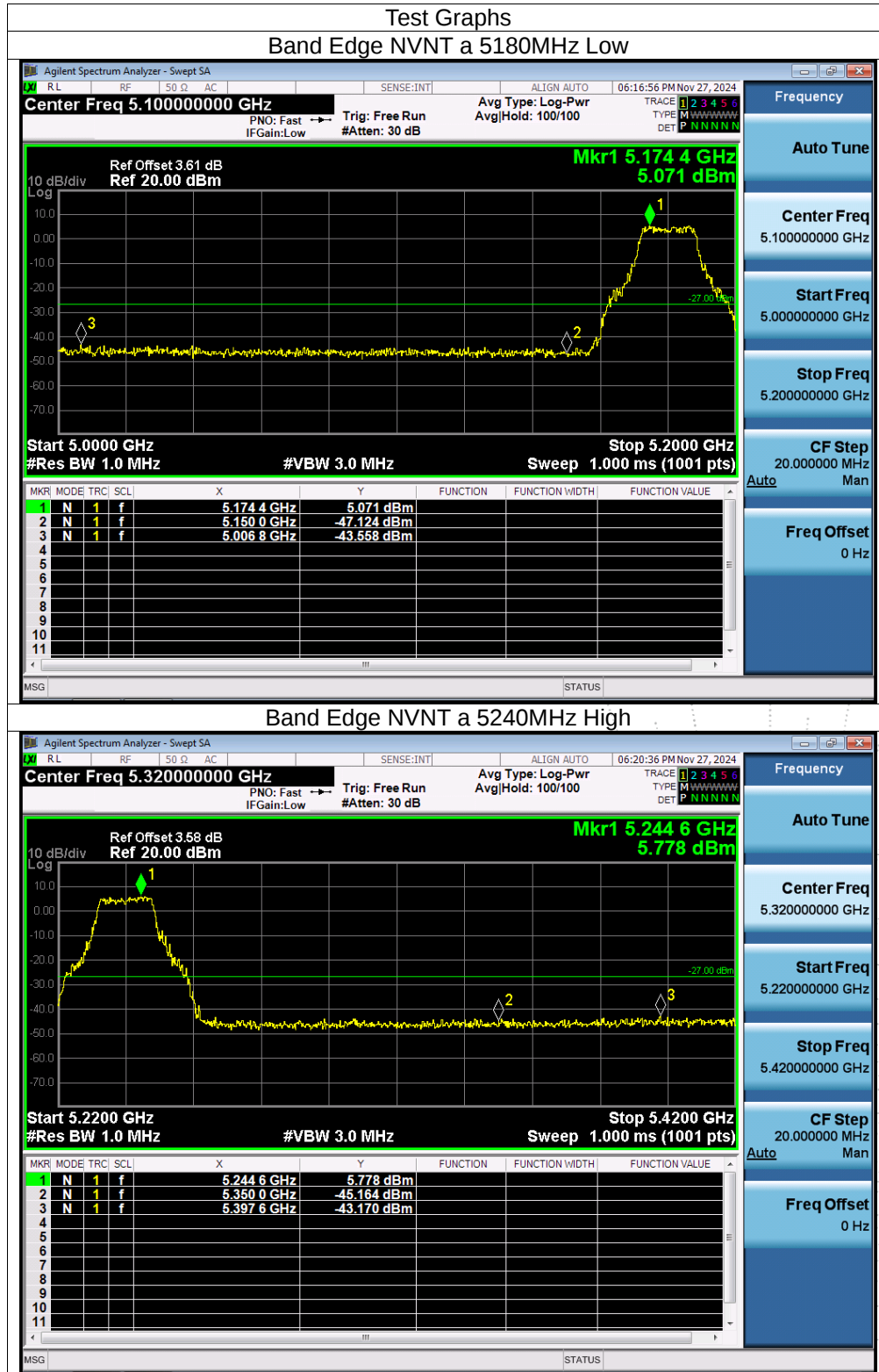
11.3 Test procedure

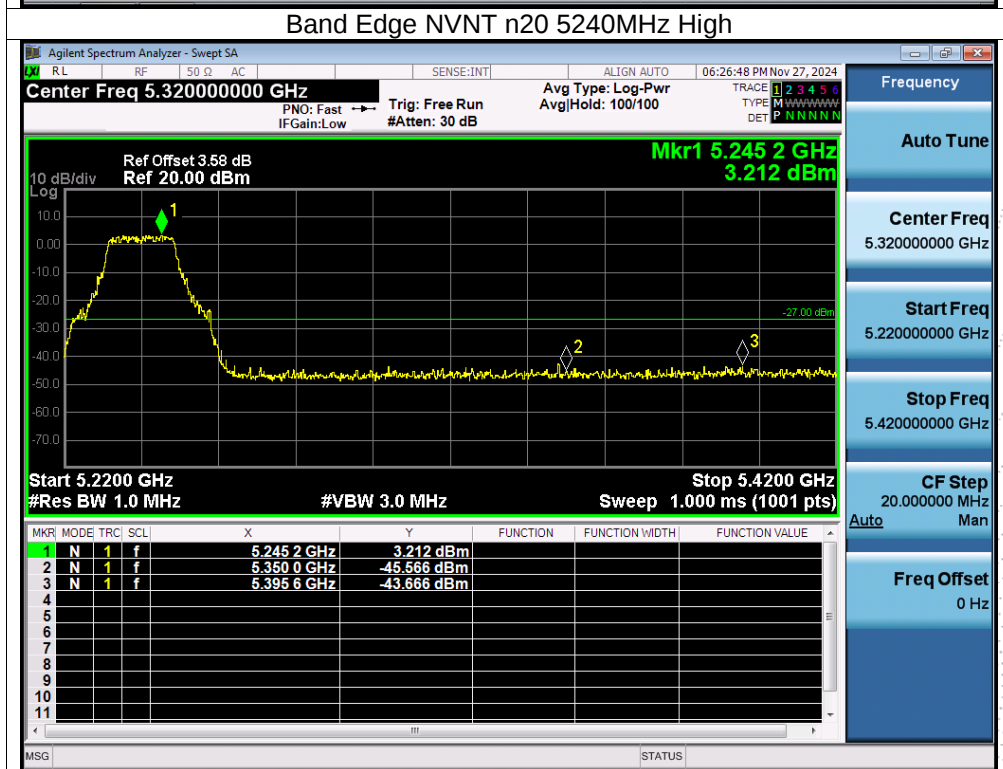
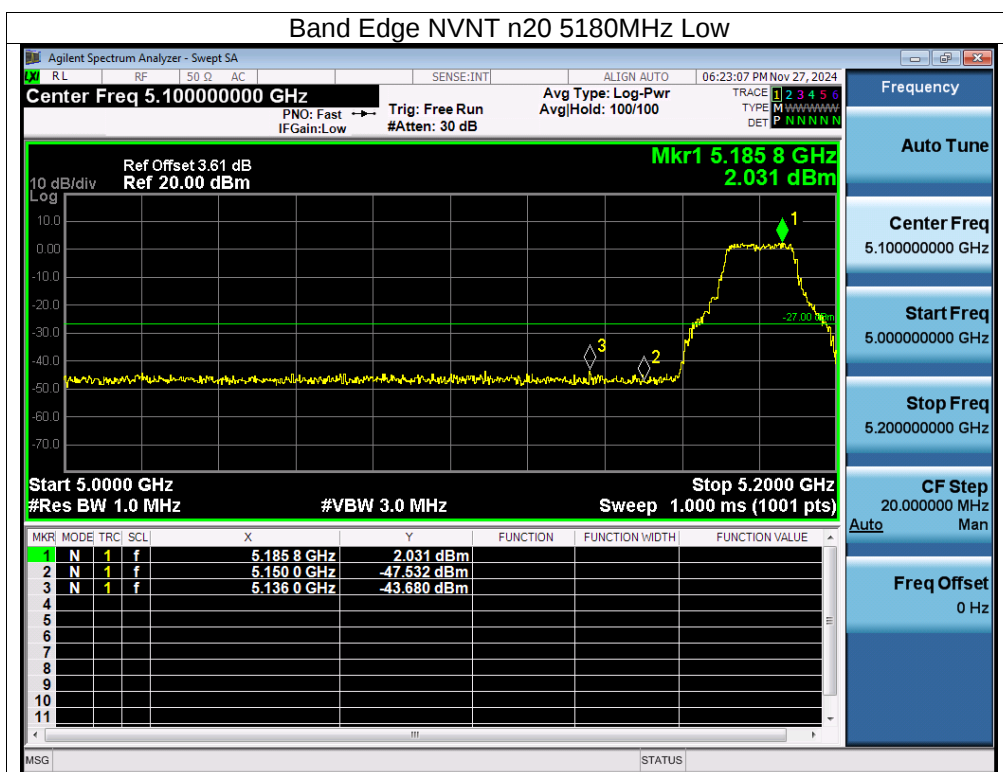
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

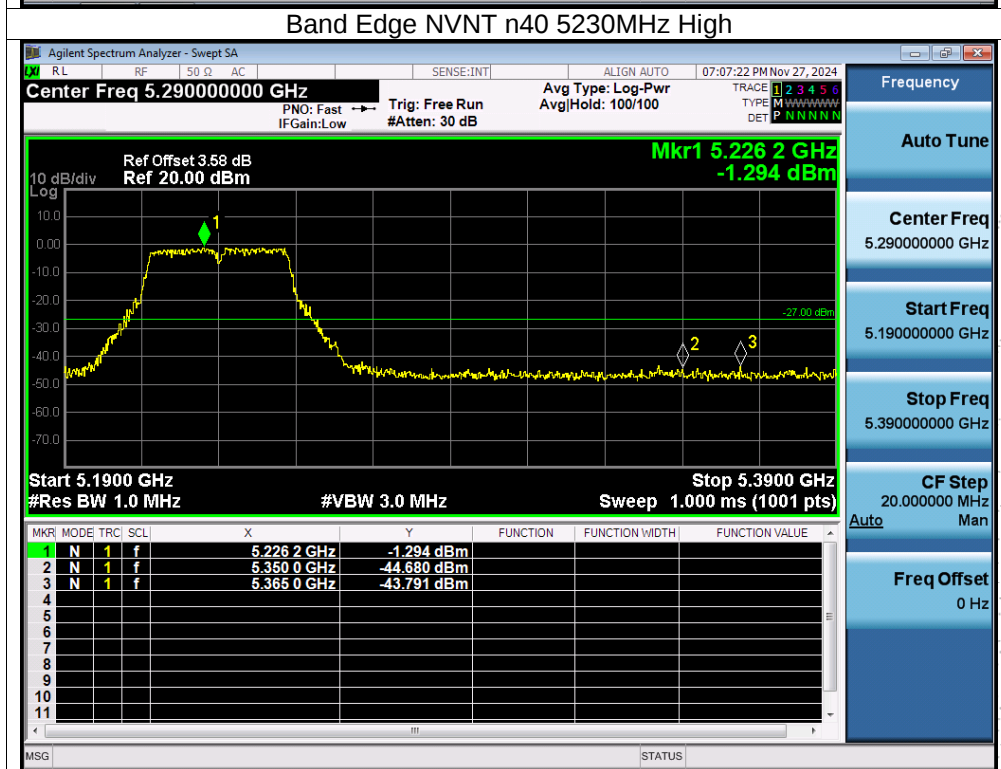
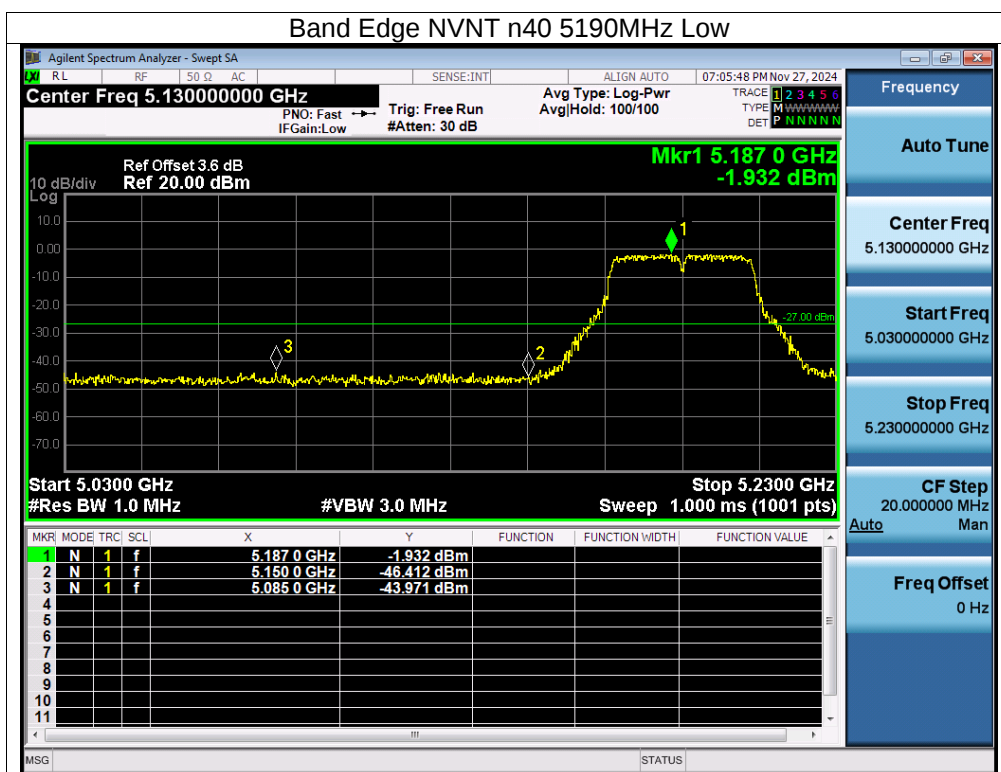
11.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

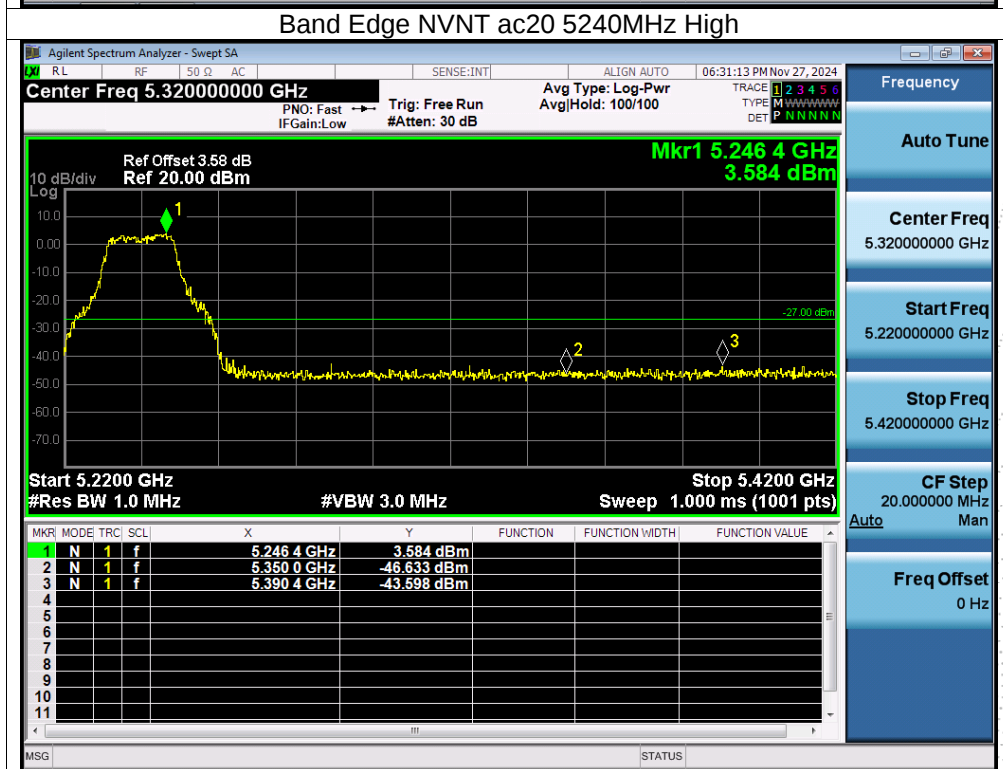
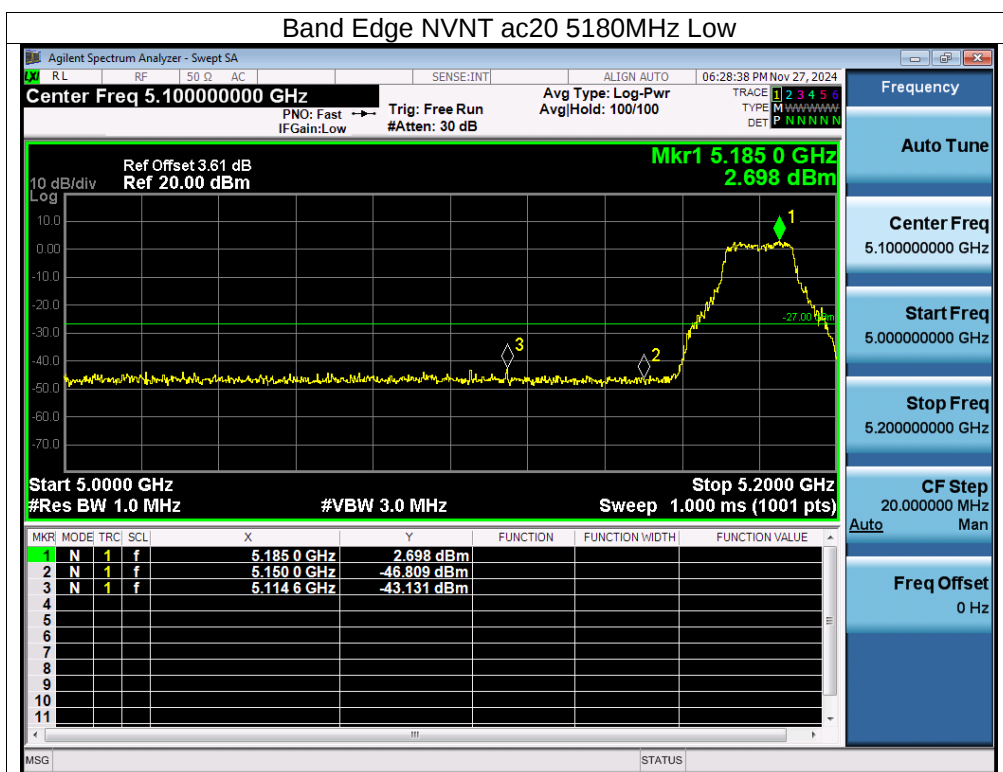
11.5 Test Result



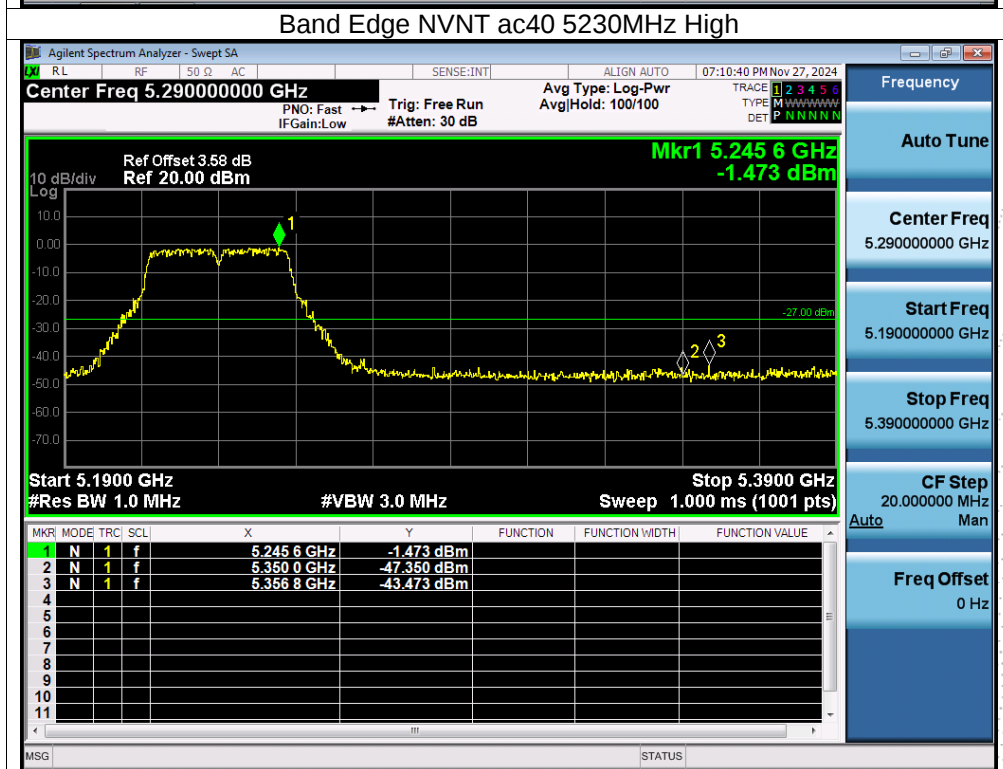
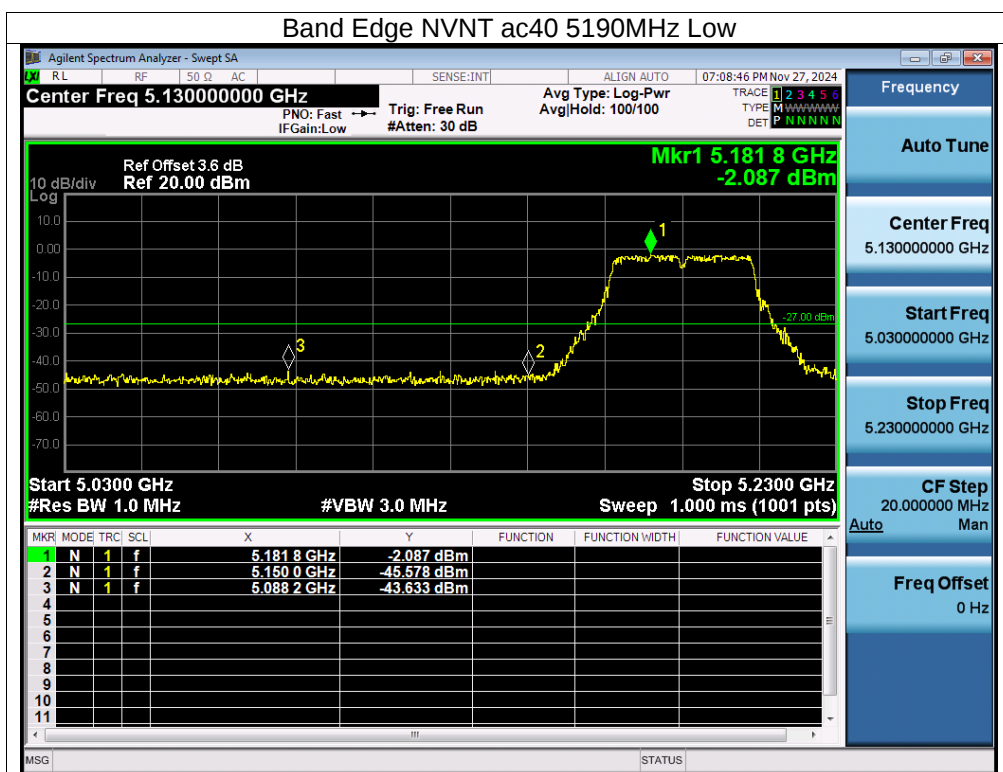


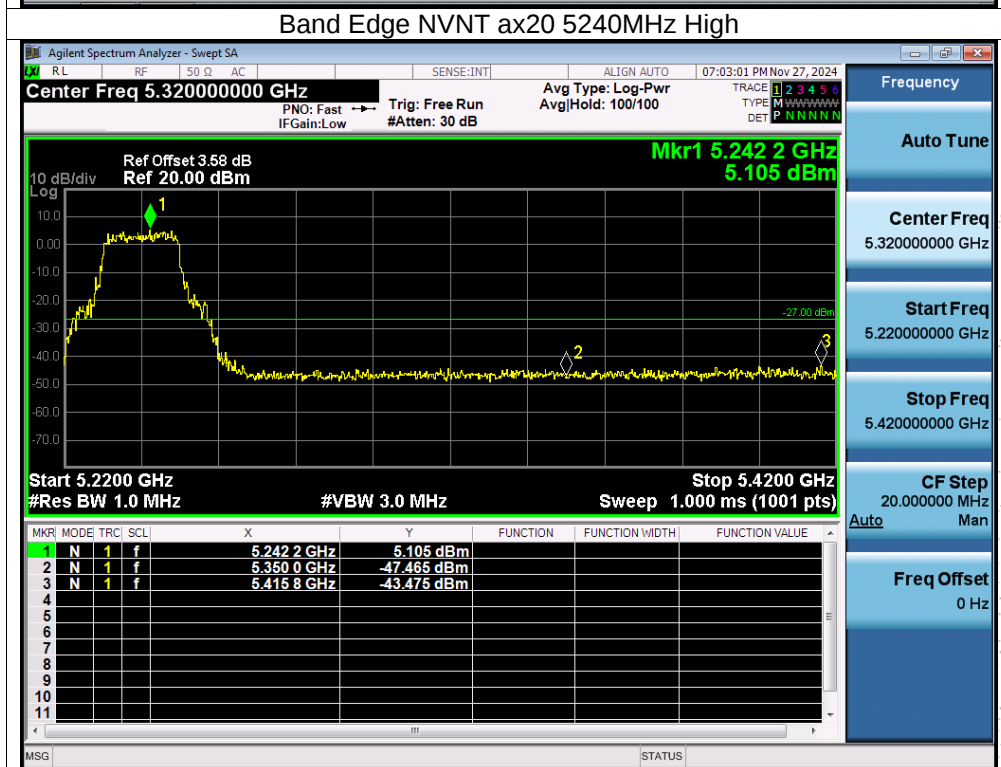
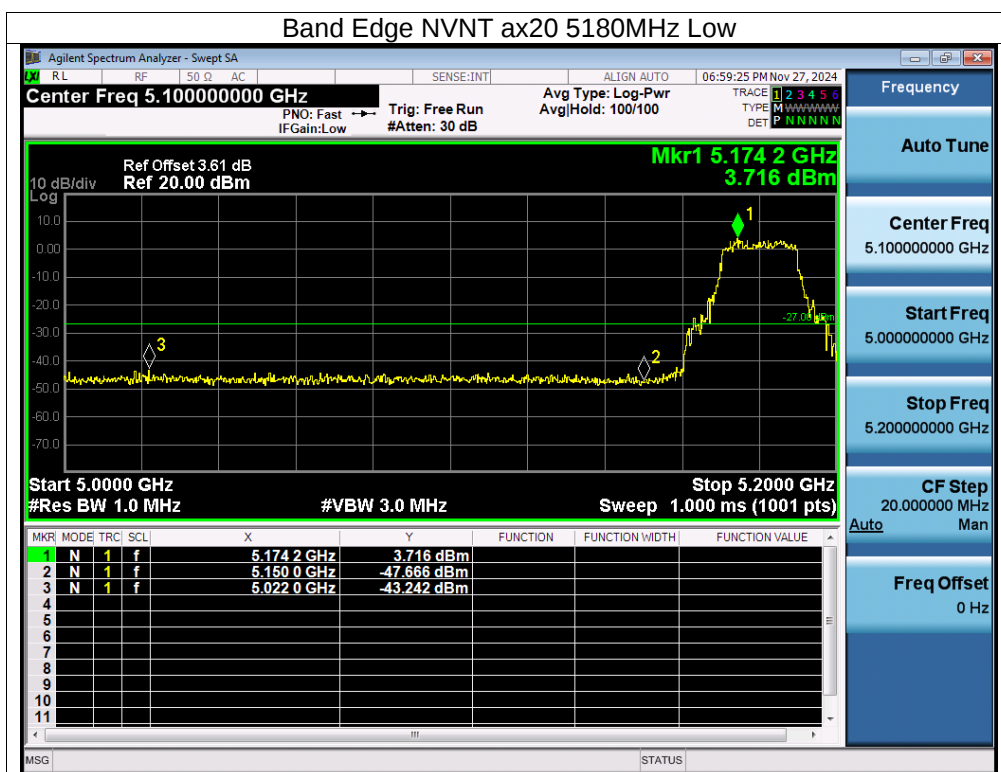


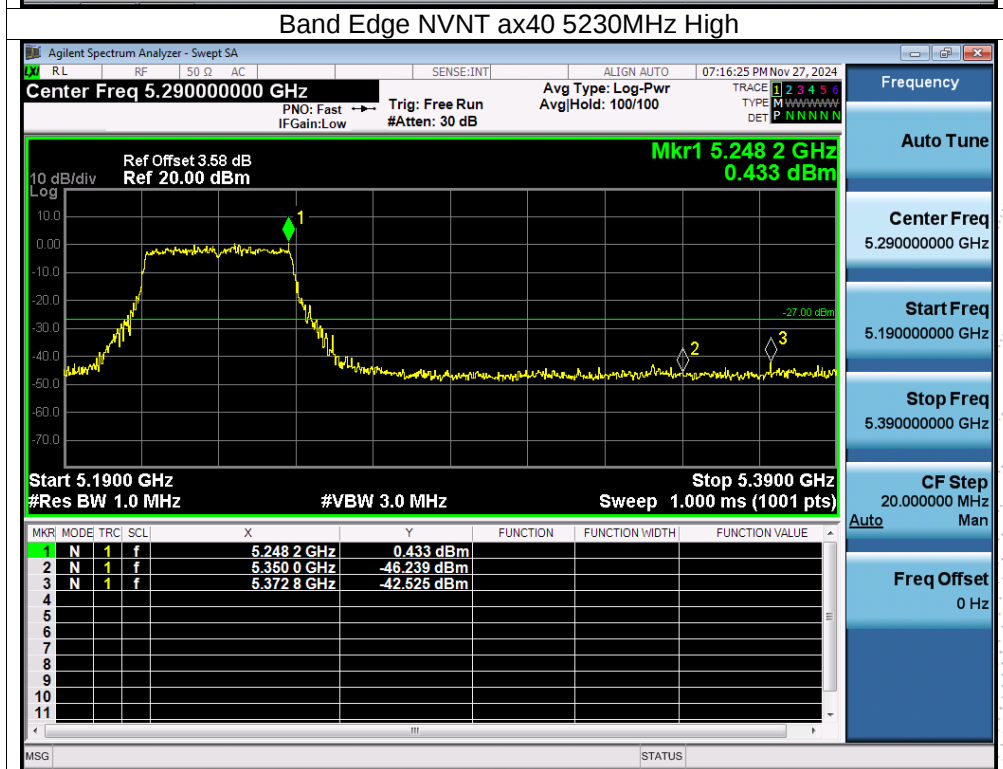
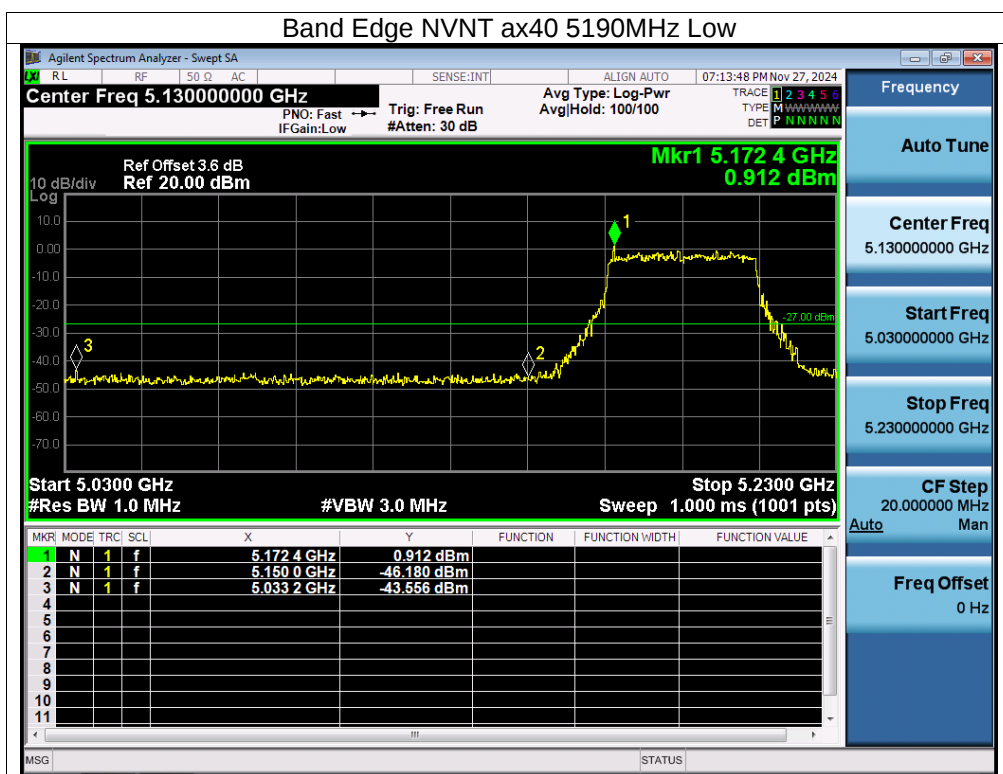
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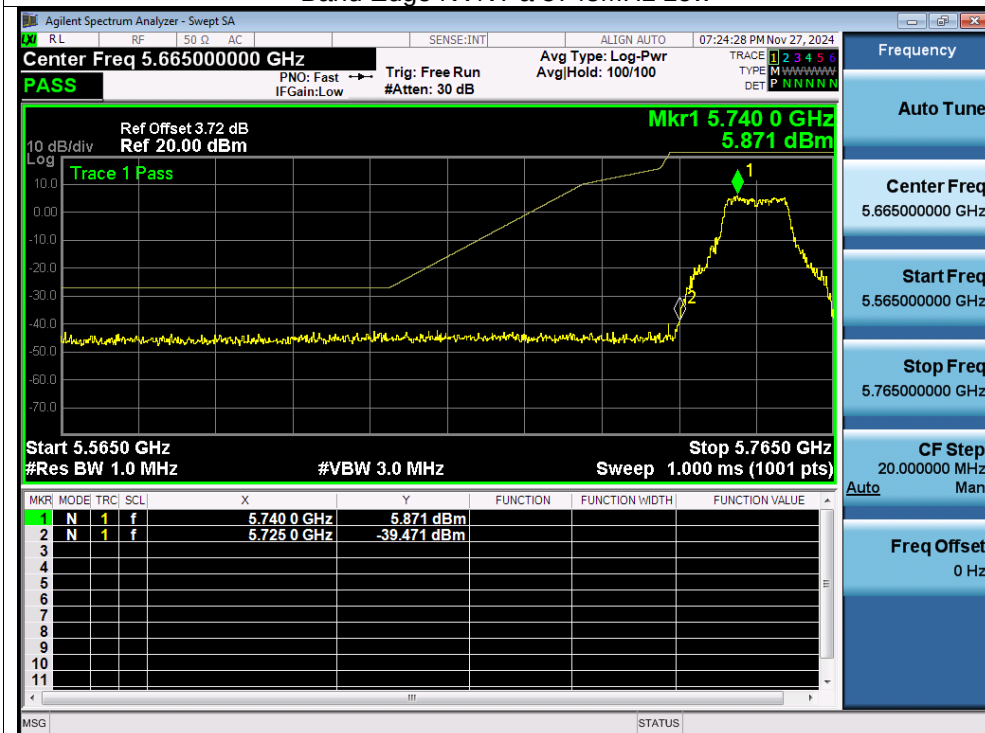




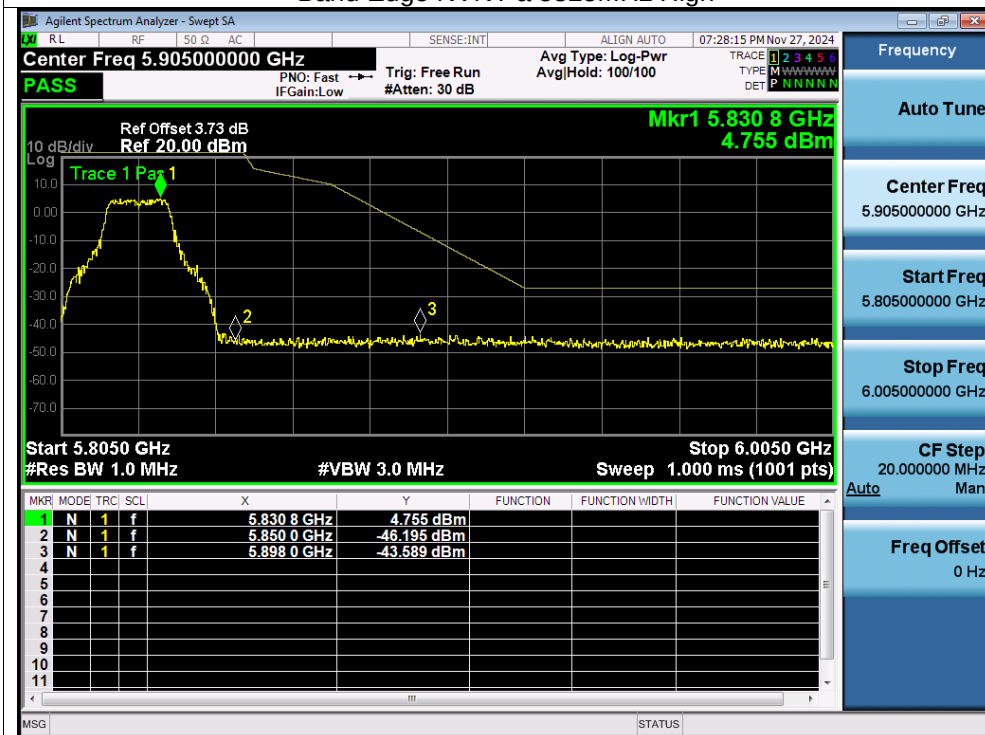


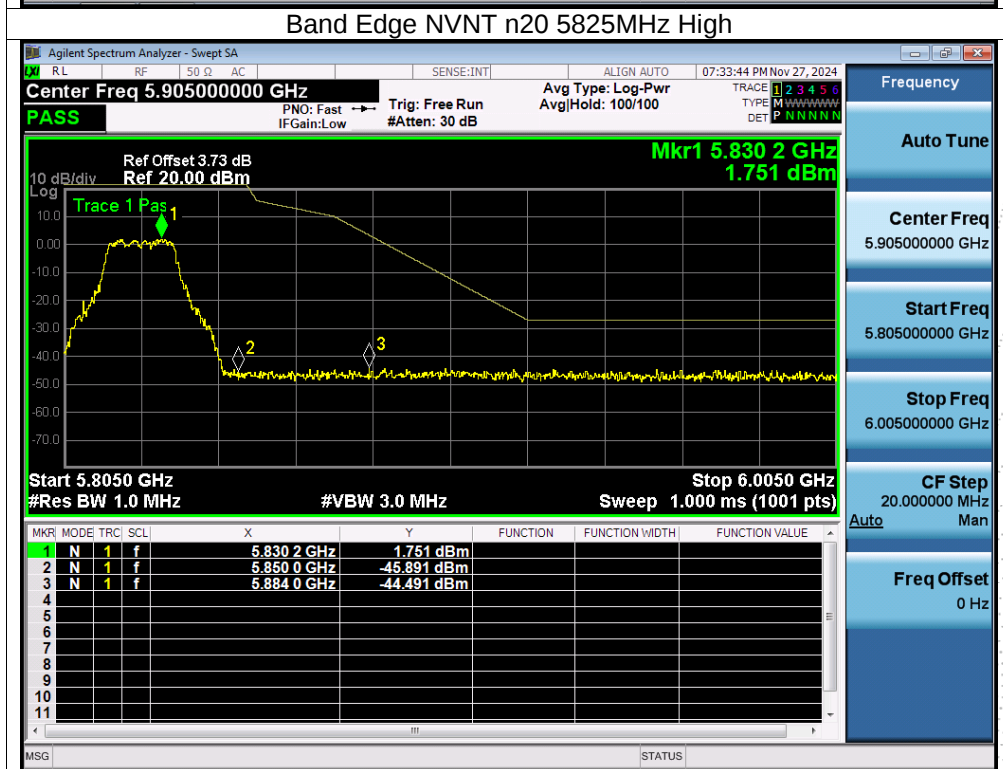
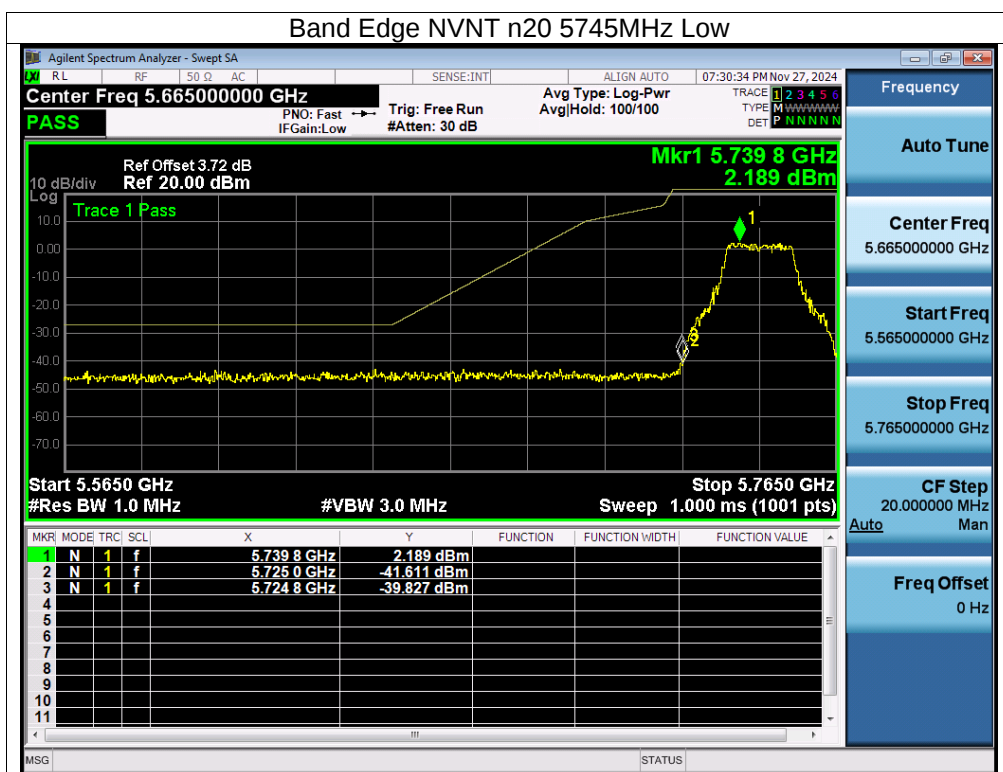
Test Graphs

Band Edge NVNT a 5745MHz Low

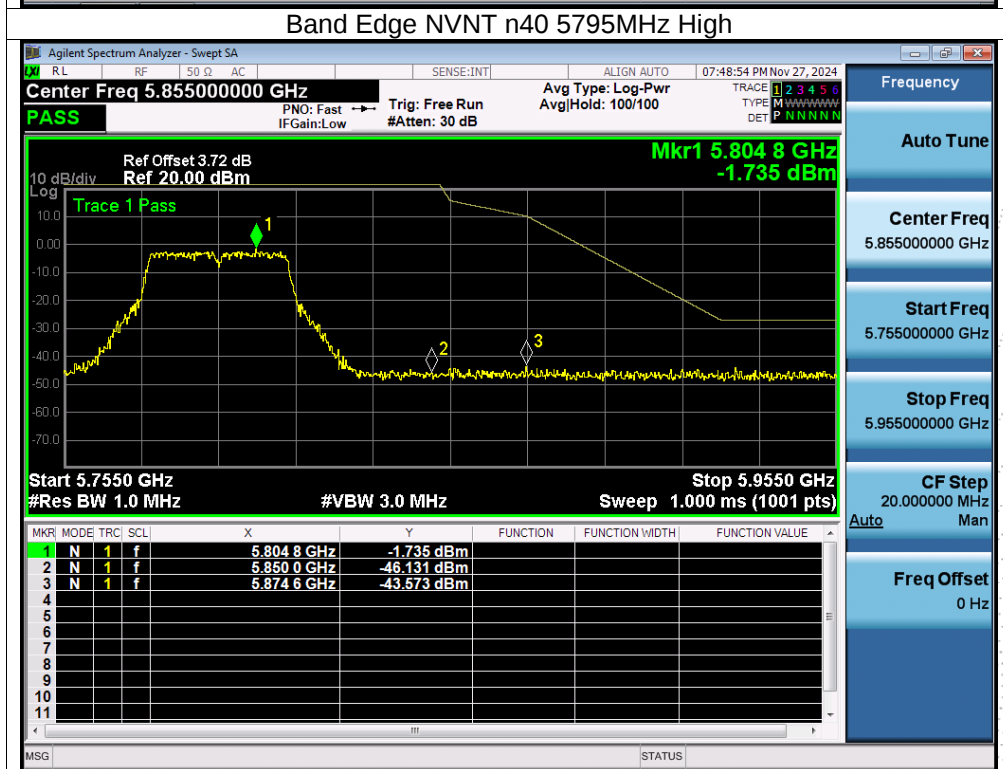
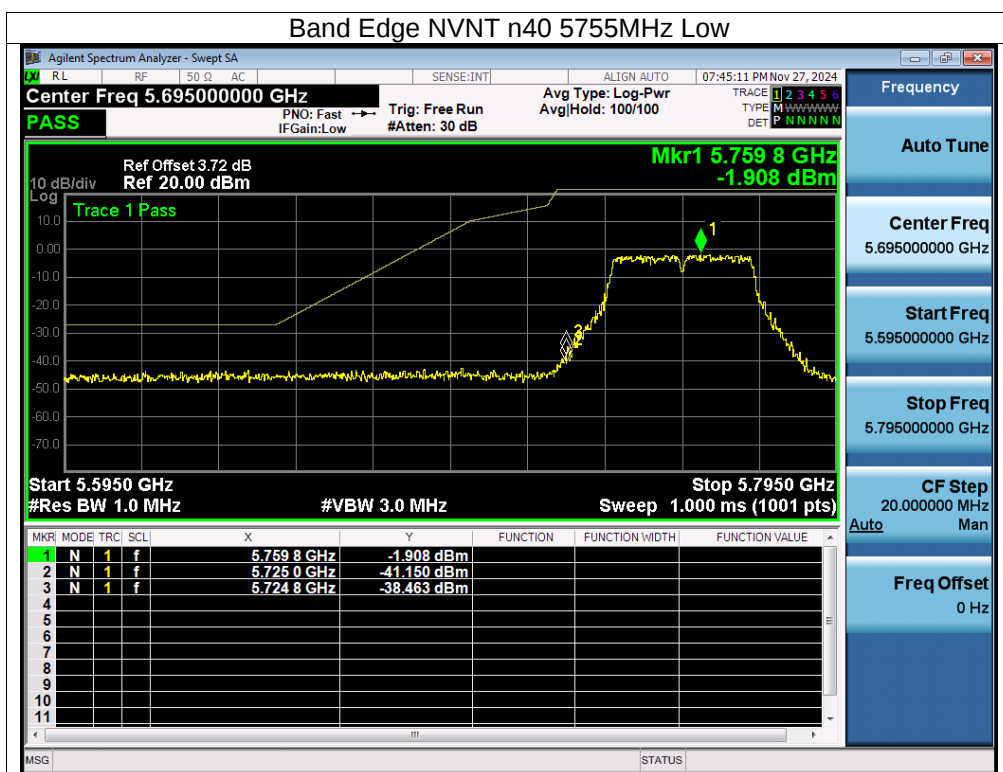


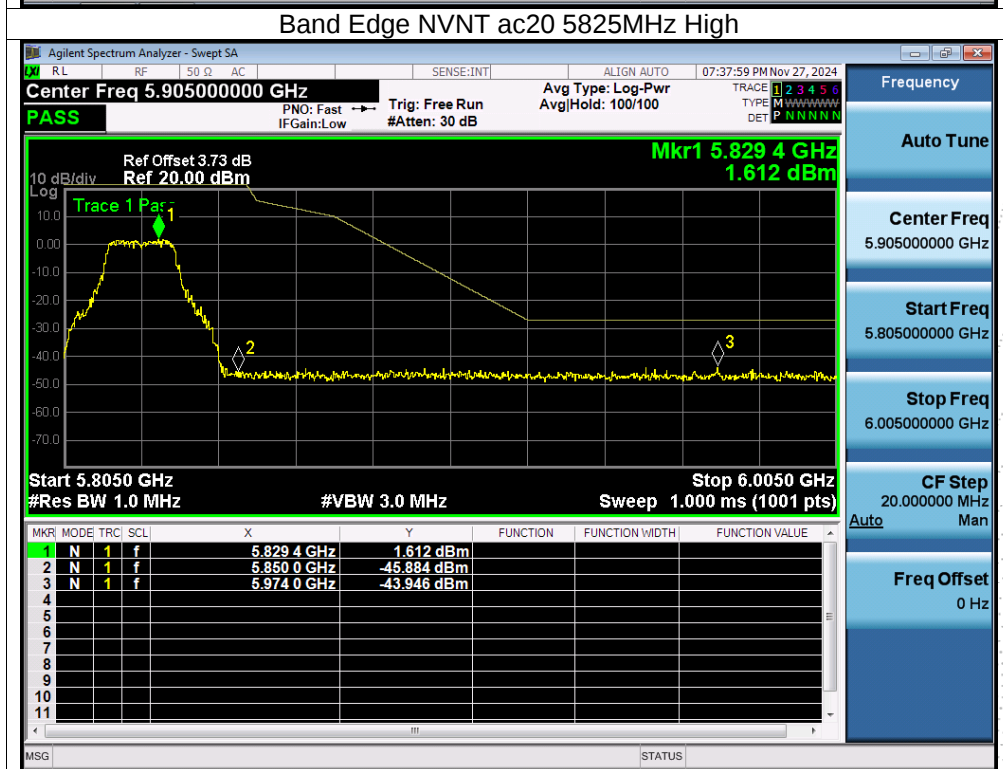
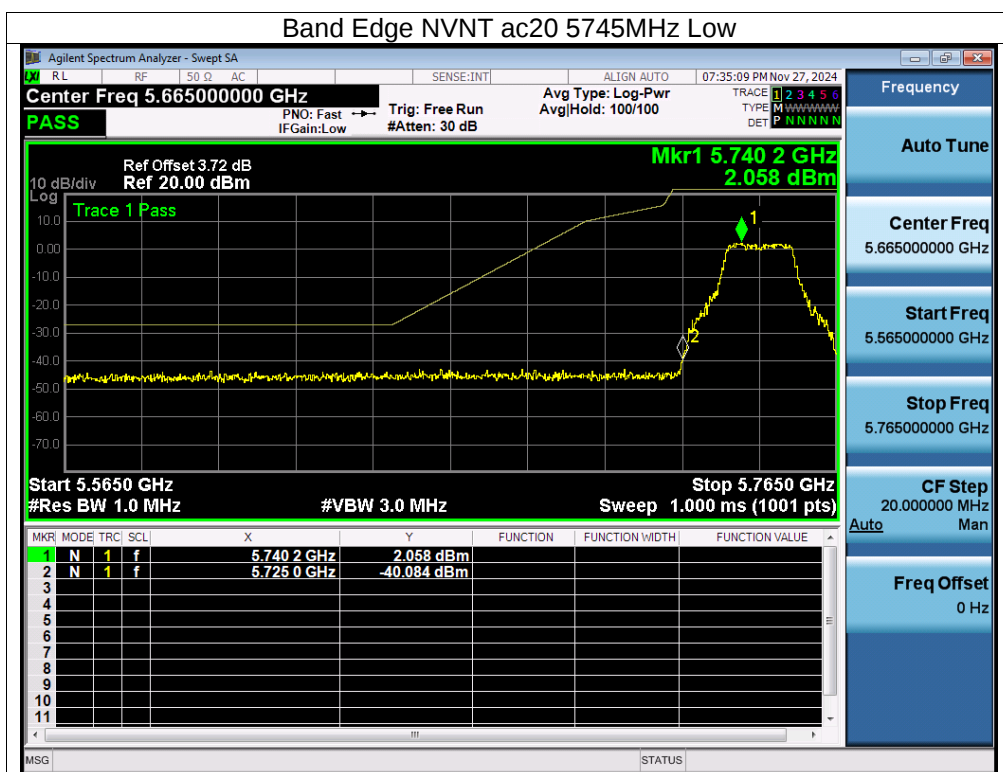
Band Edge NVNT a 5825MHz High

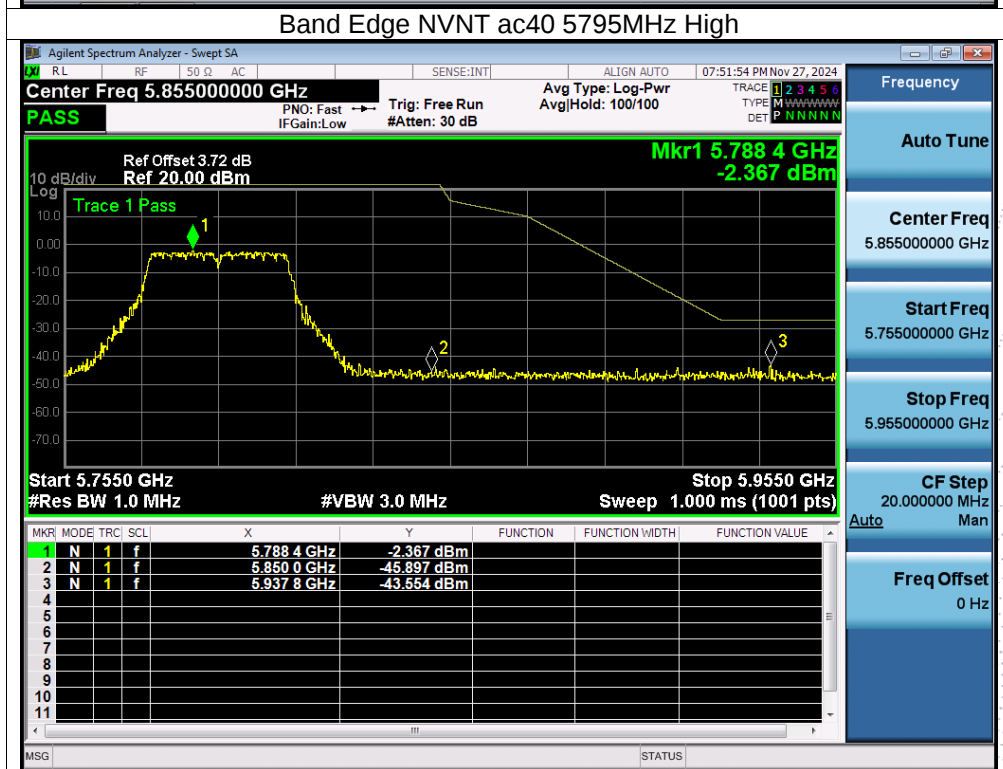
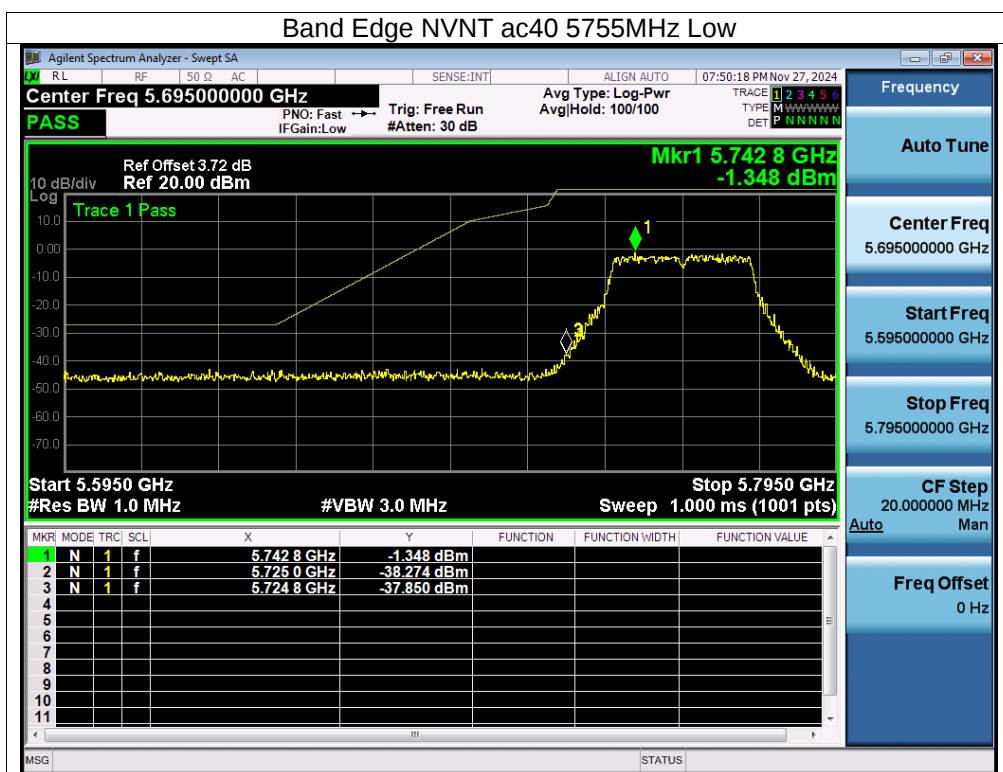


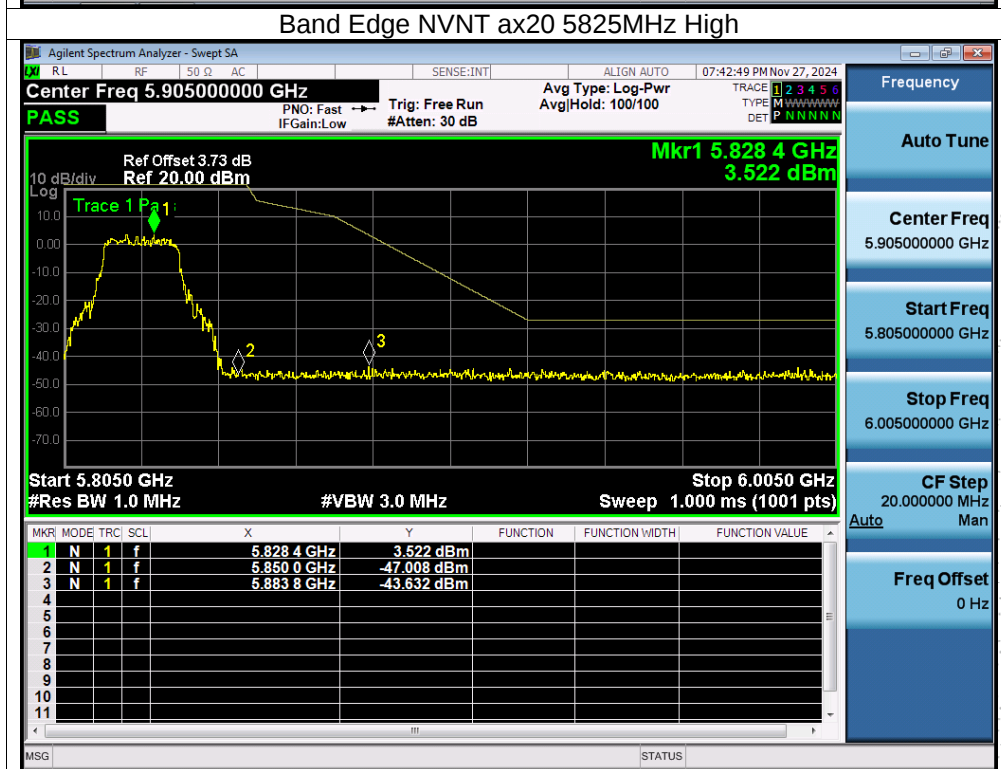
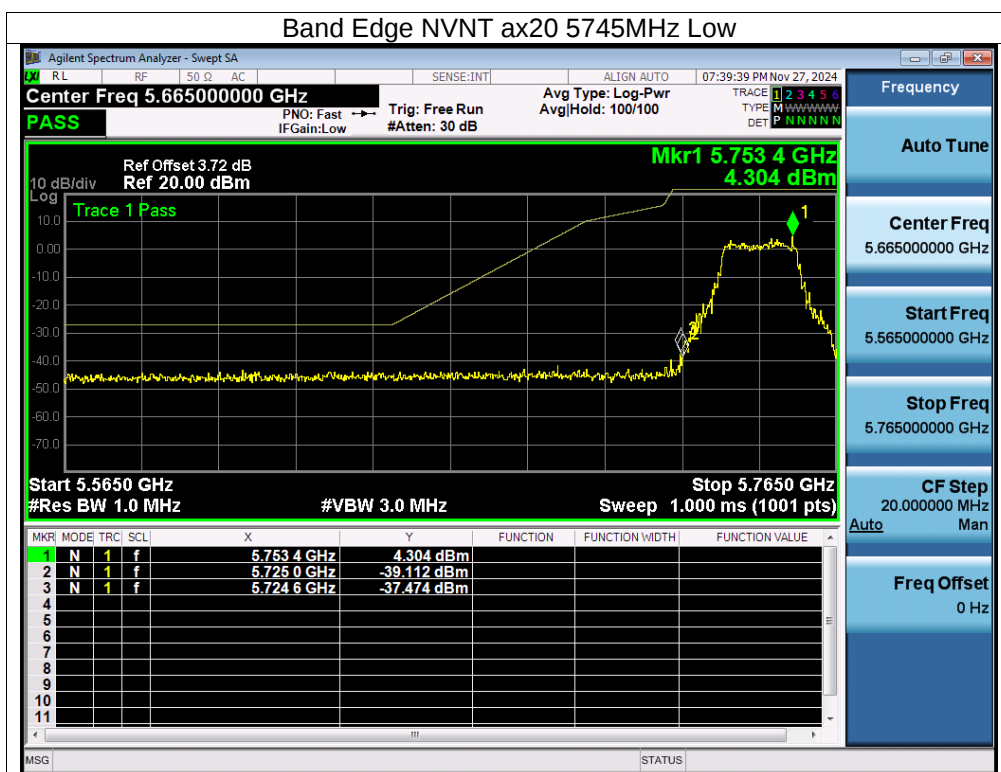


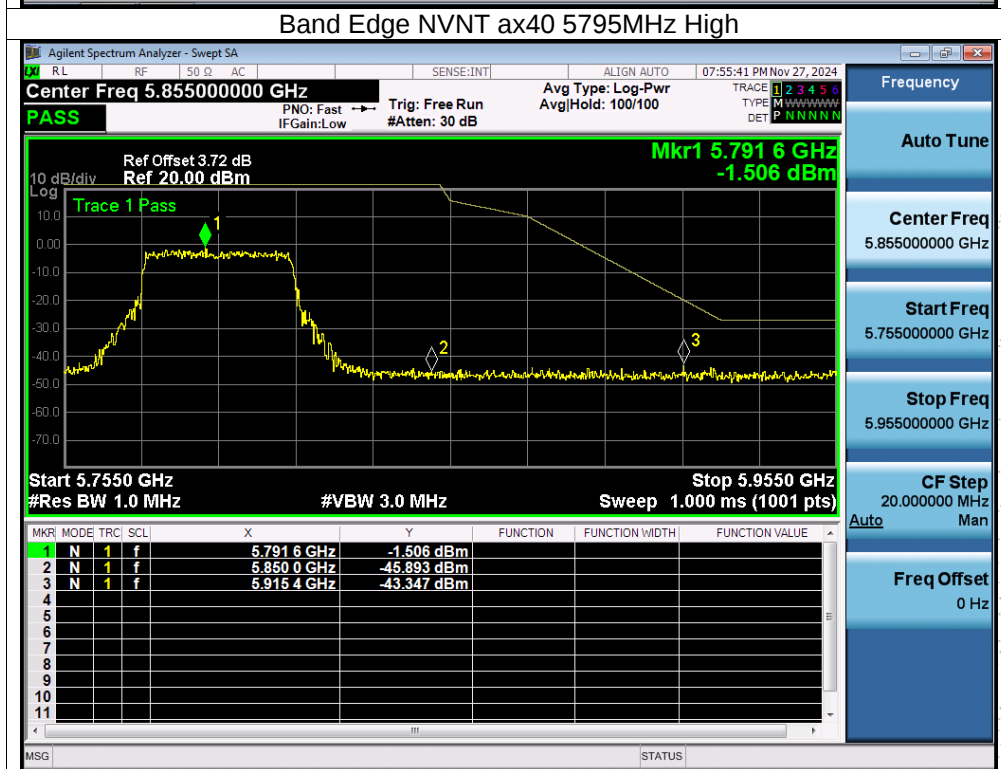
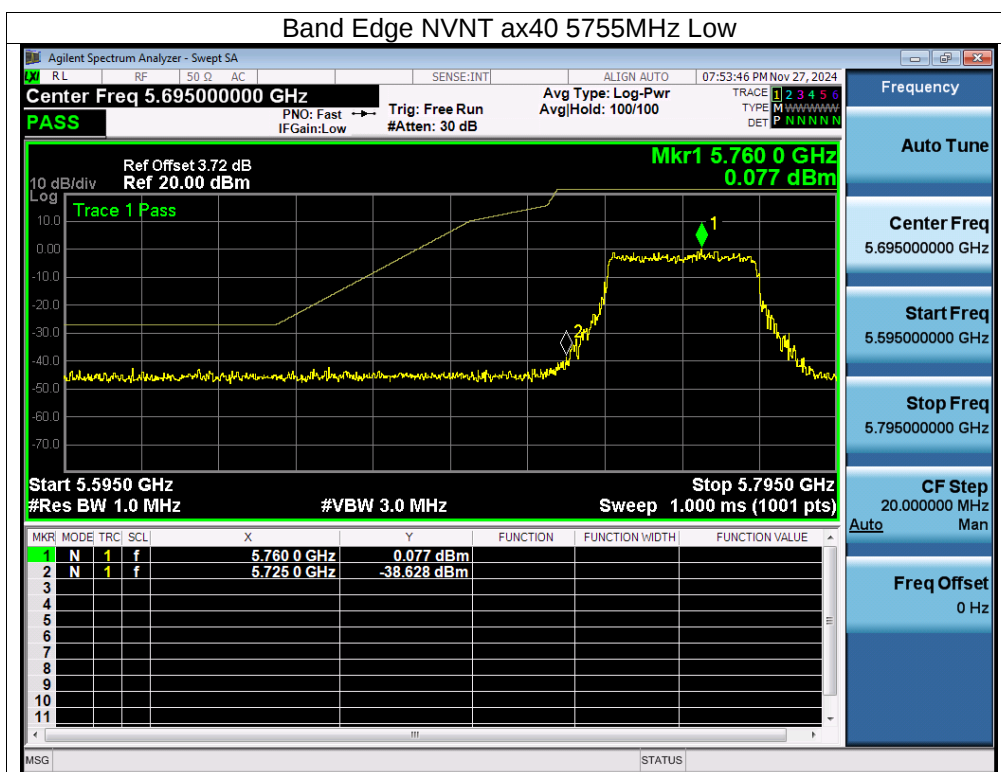
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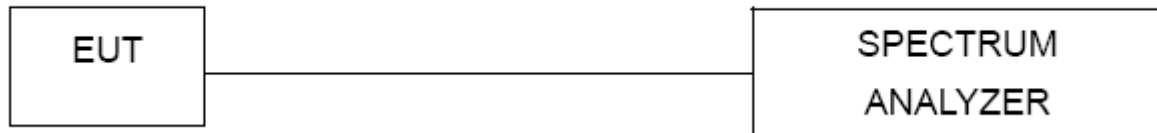






12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

12.3 Test procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

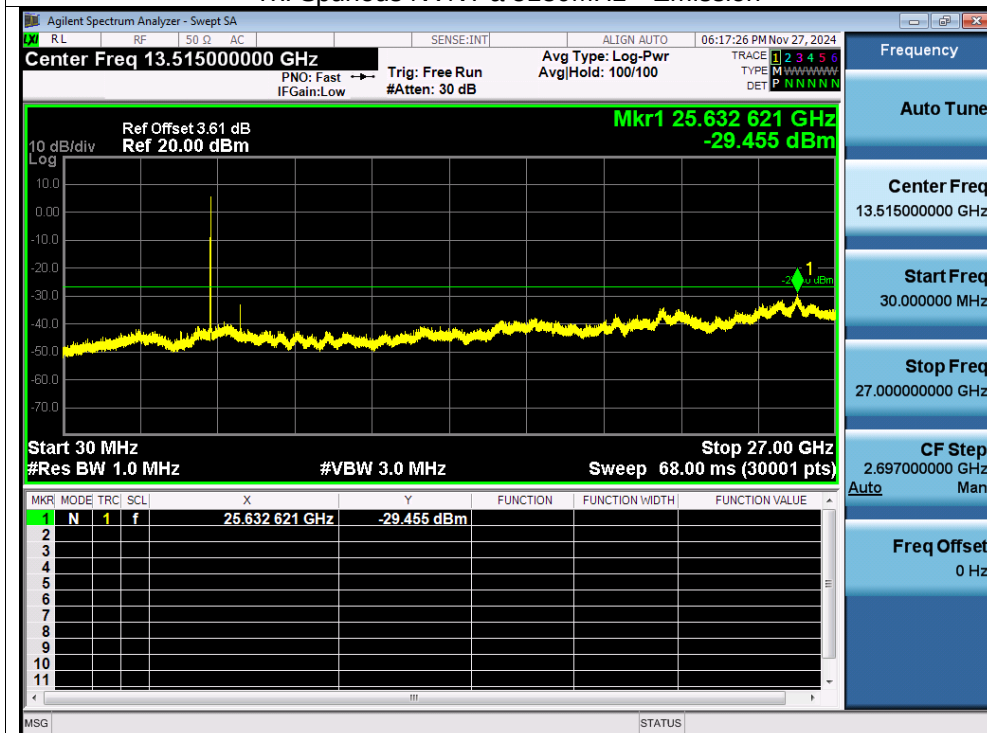
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

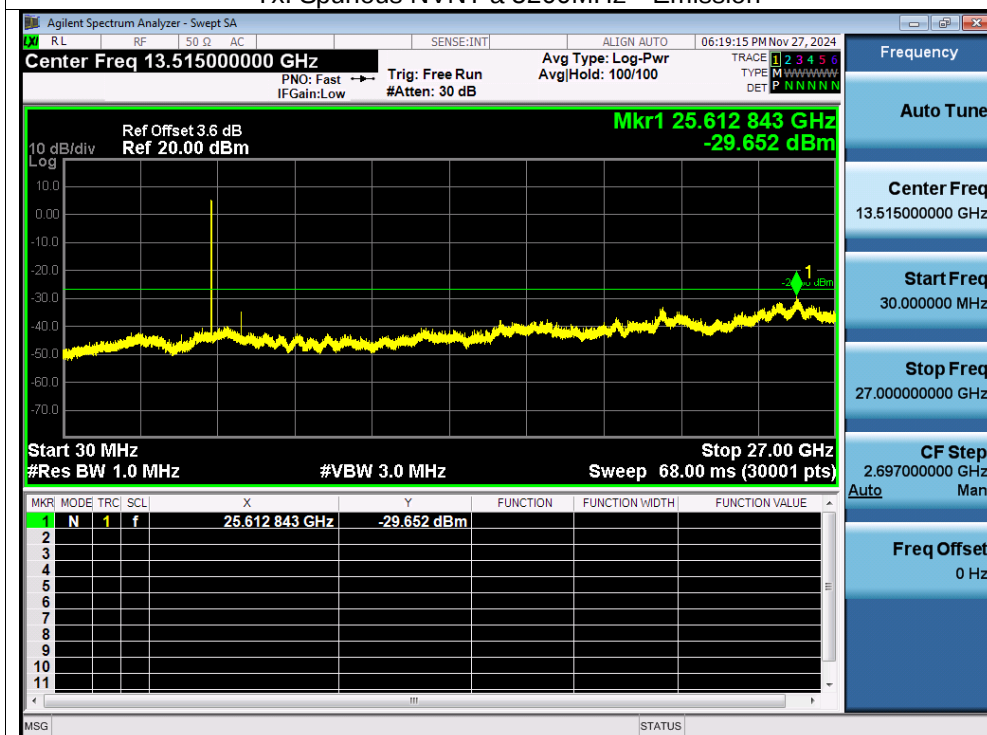
About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Test Graphs

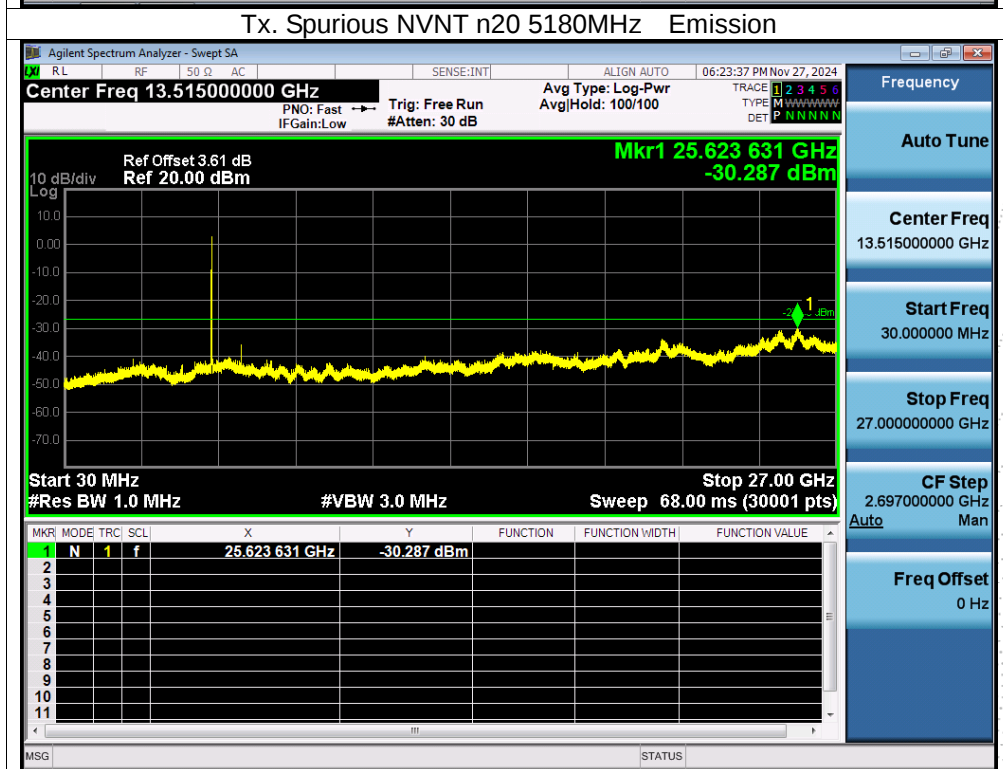
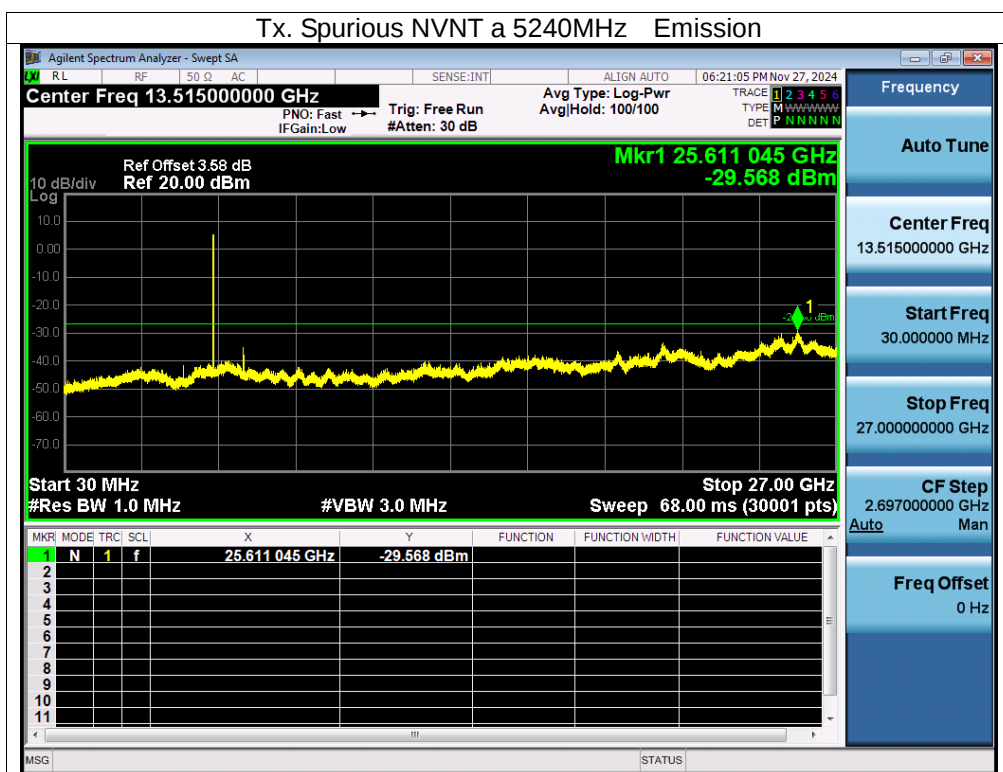
Tx. Spurious NVNT a 5180MHz Emission

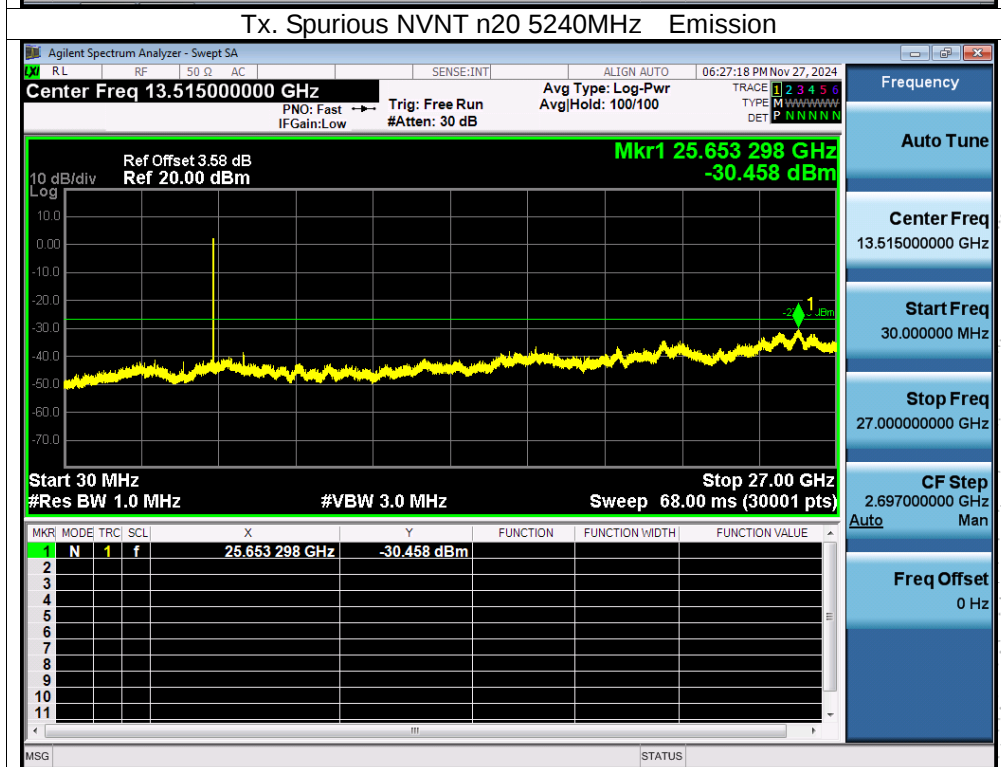
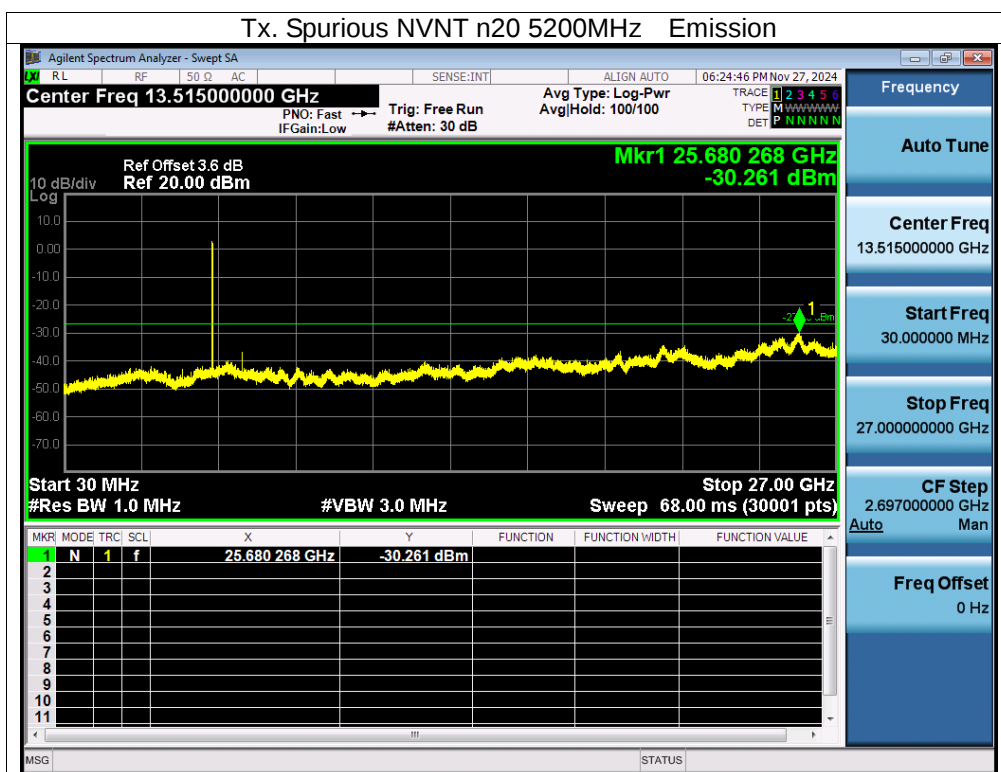


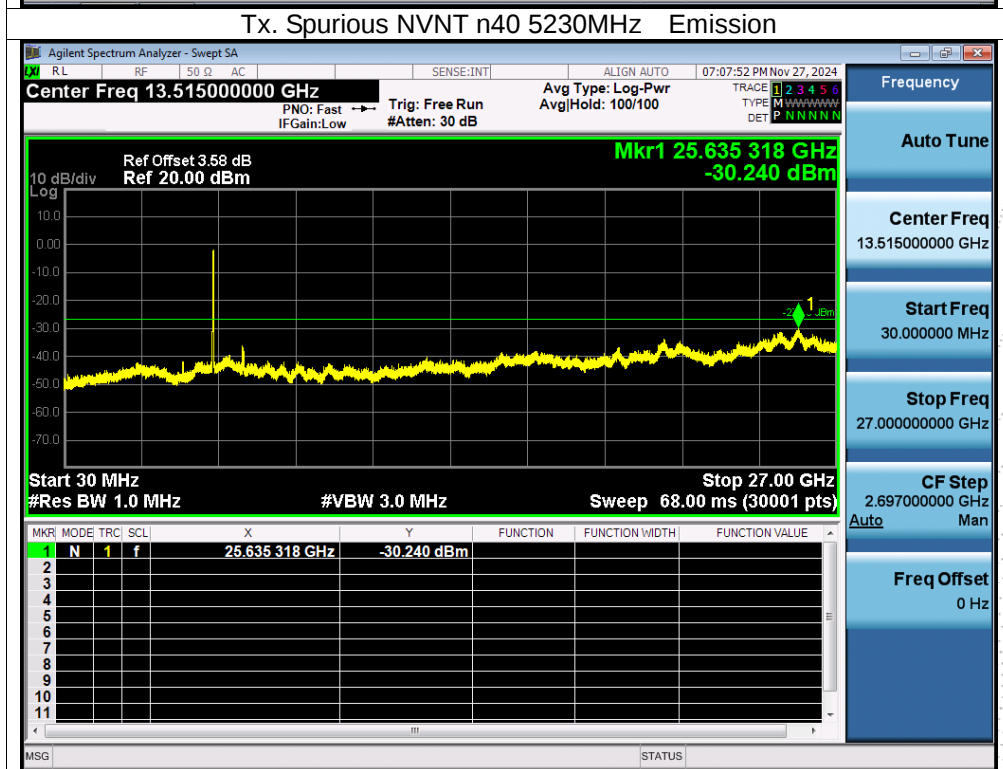
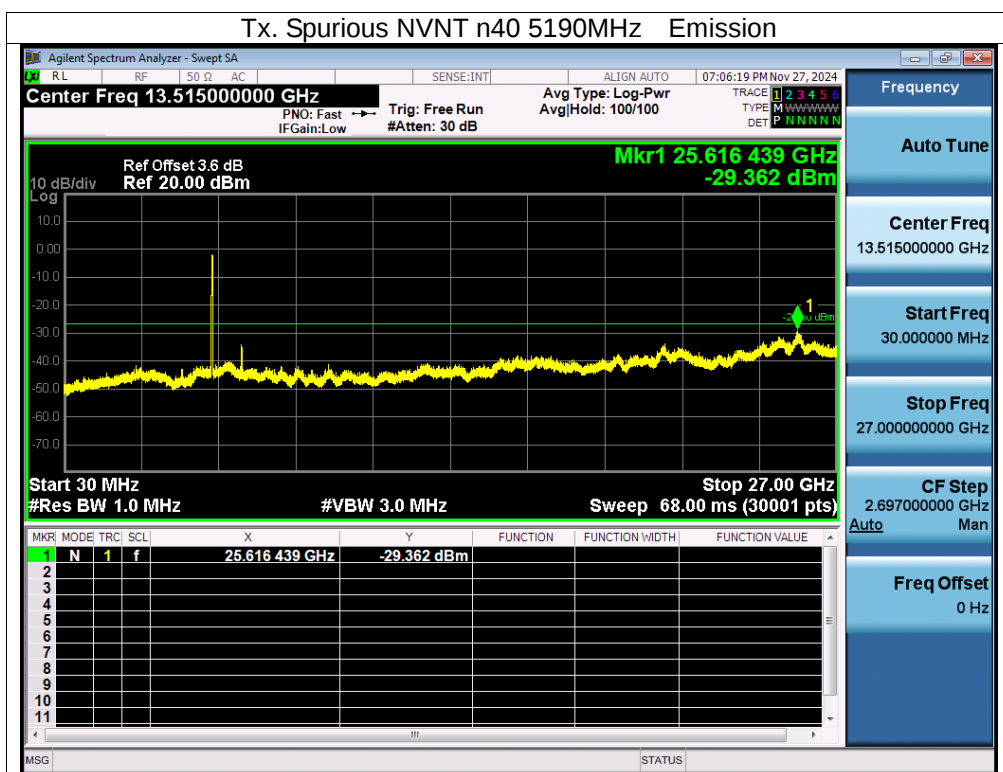
Tx. Spurious NVNT a 5200MHz Emission

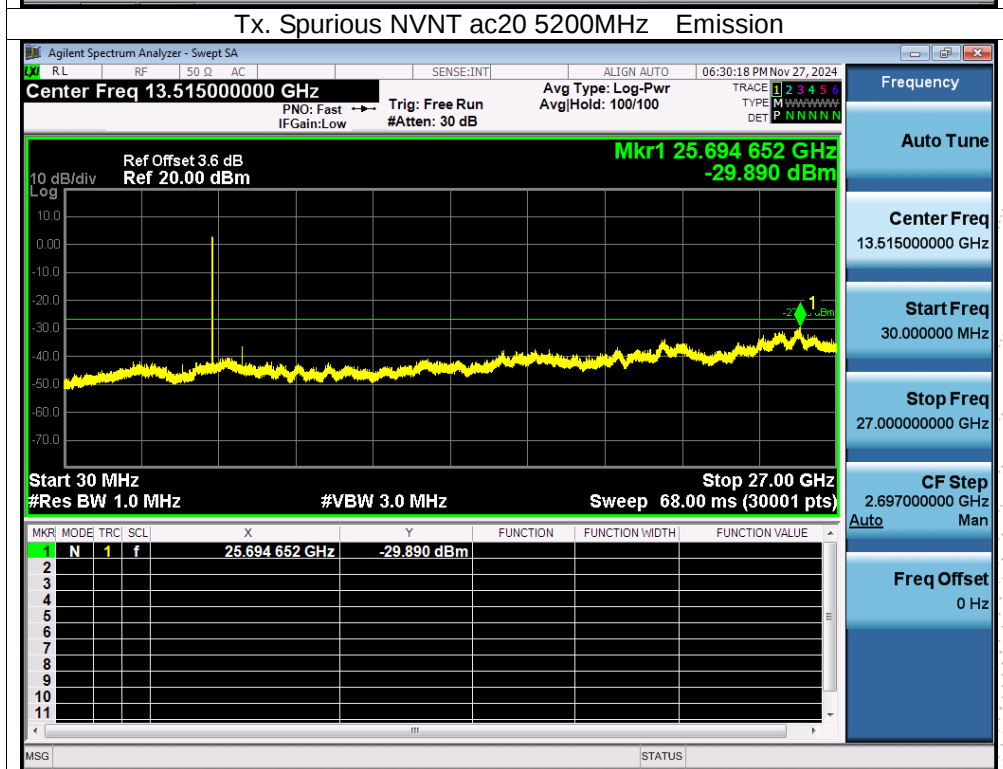
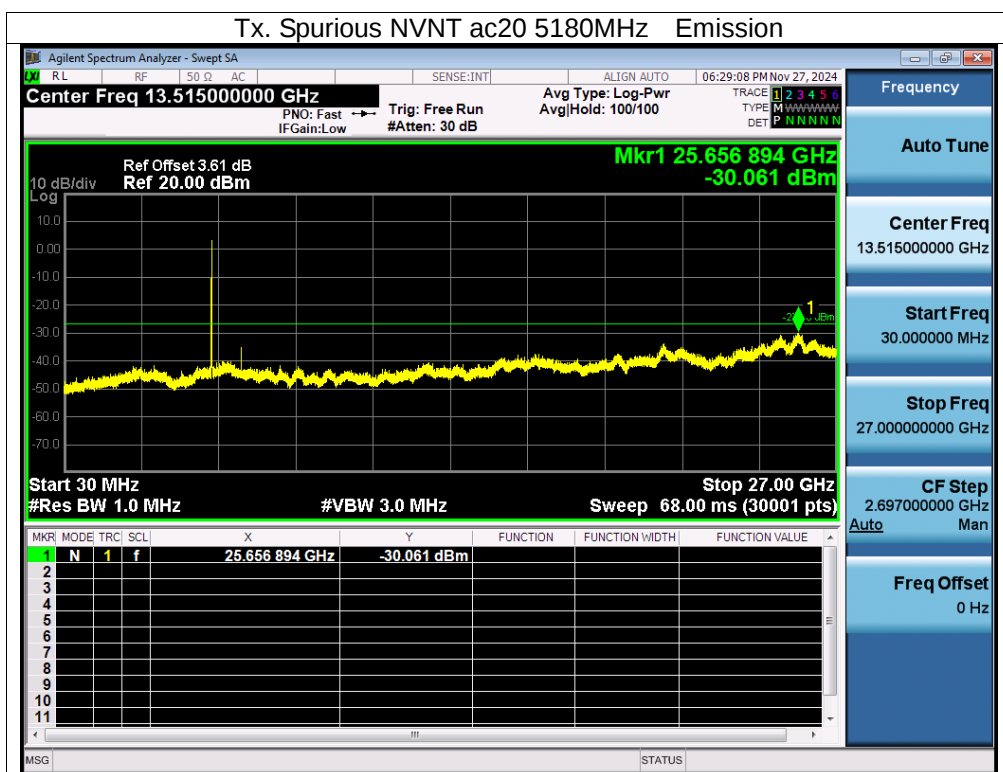


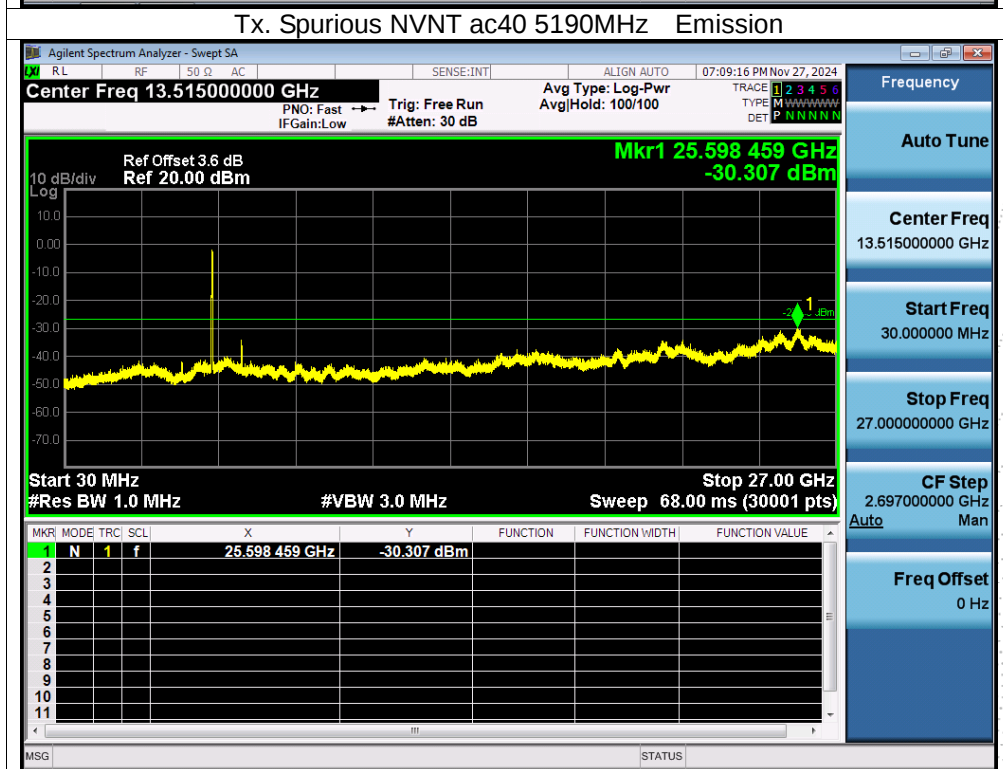
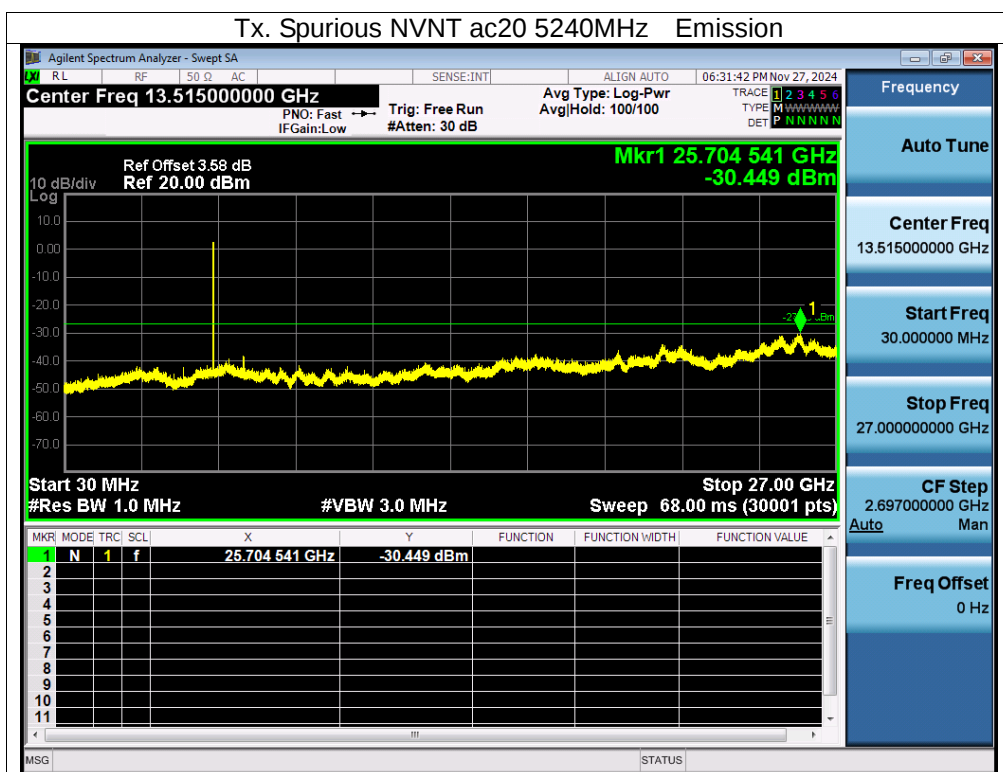
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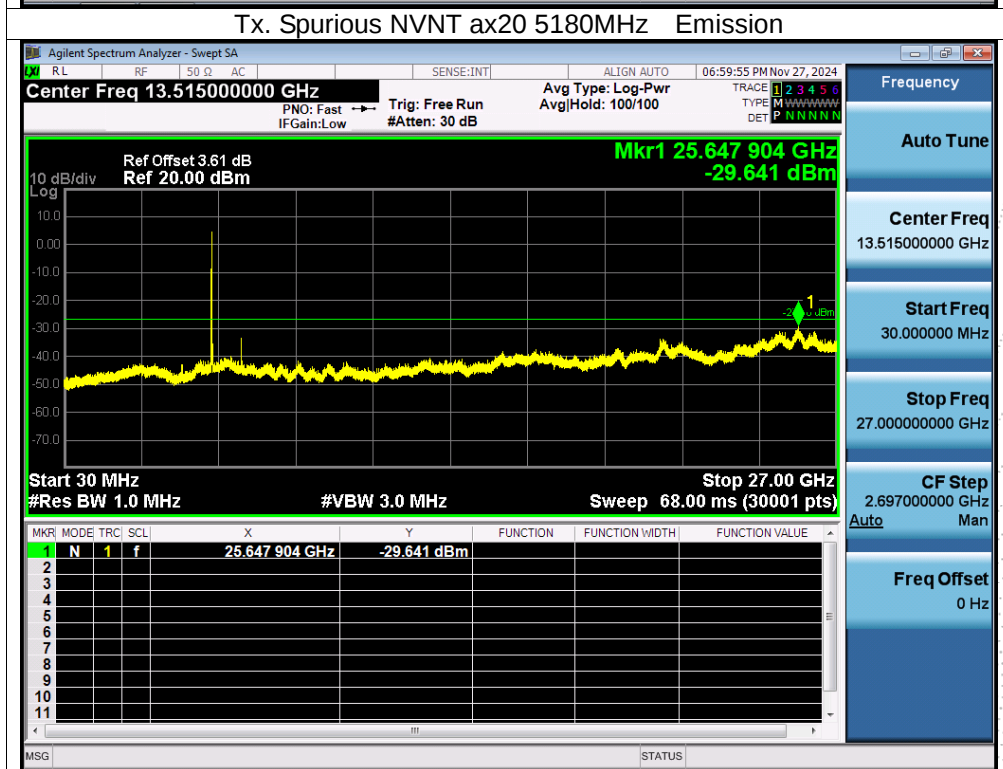
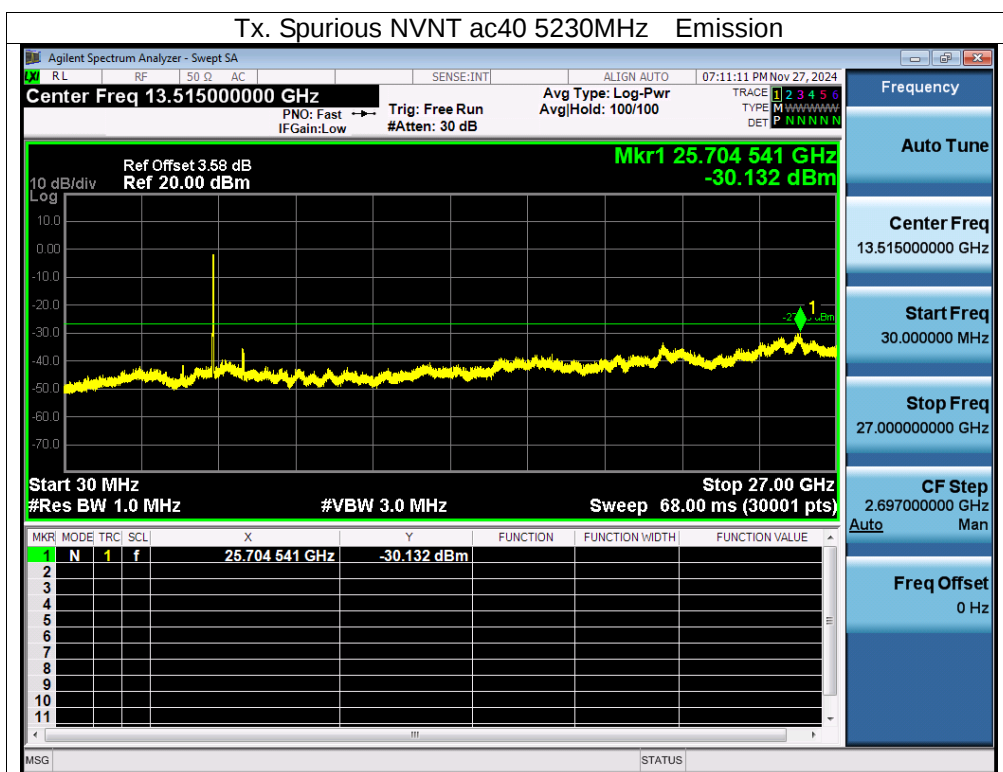




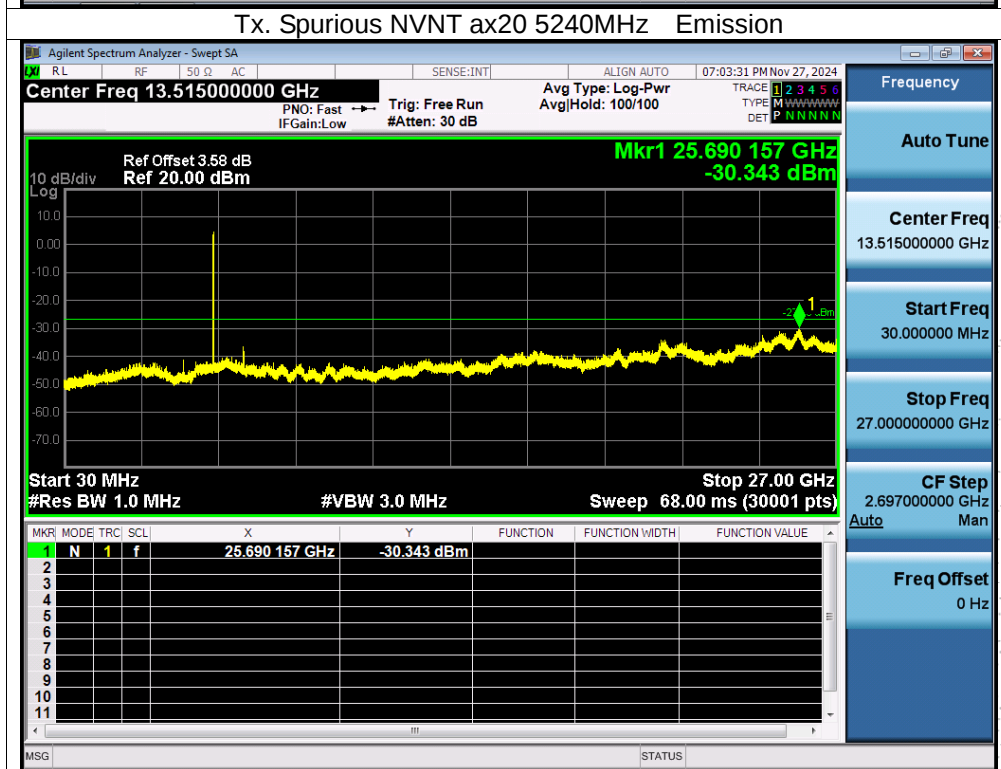
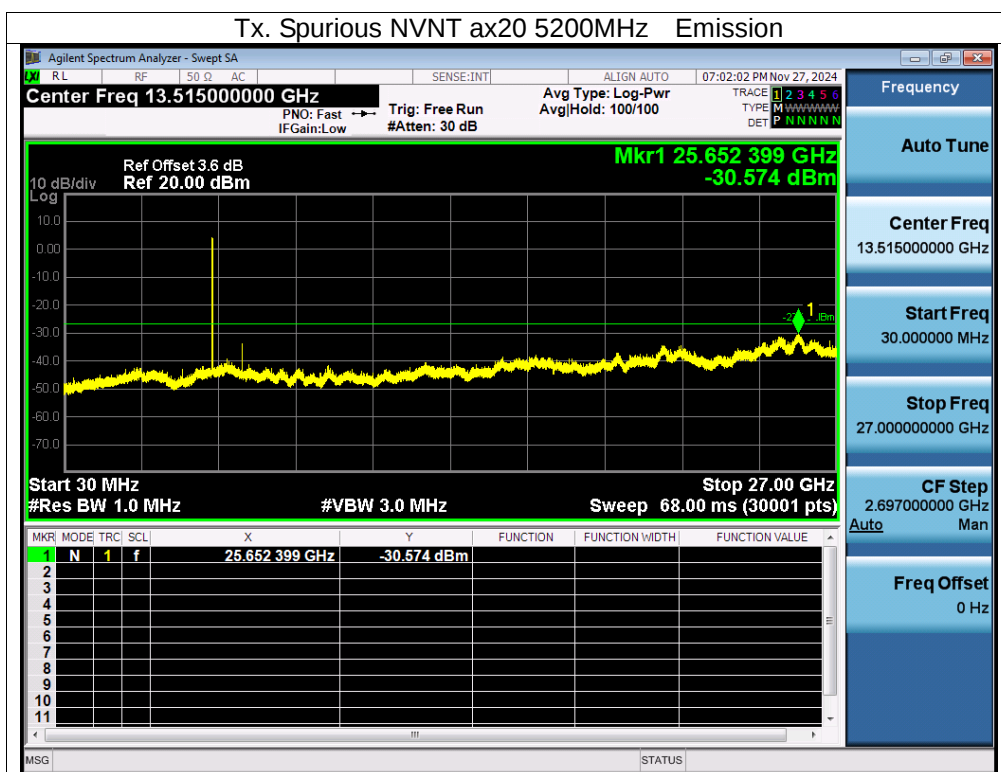


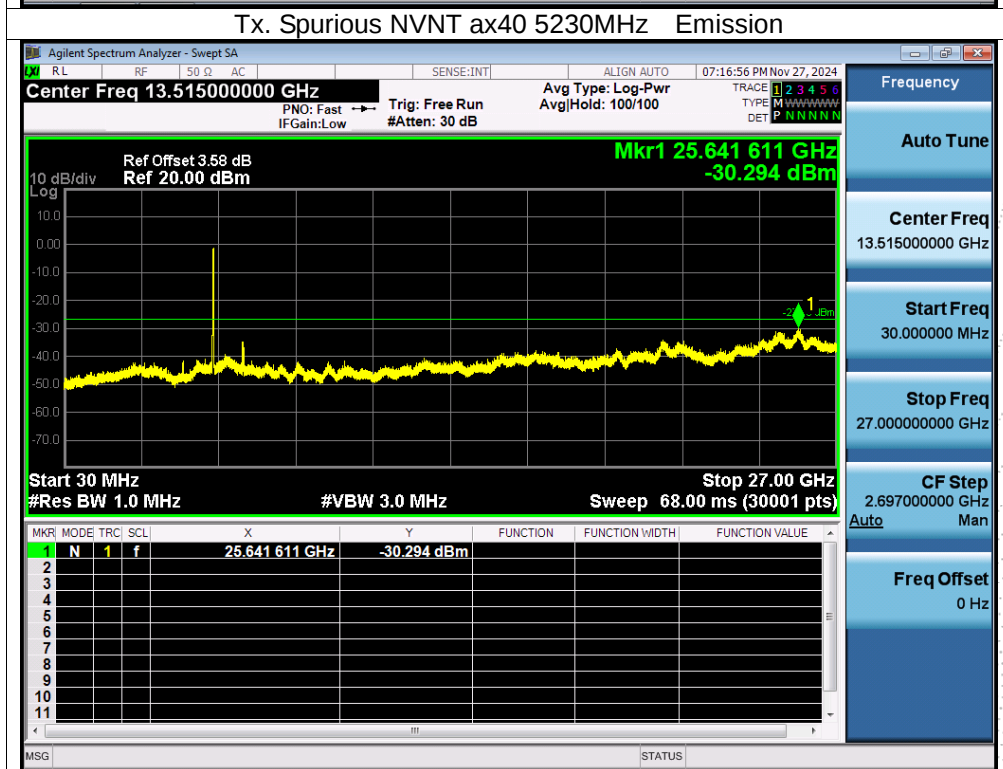
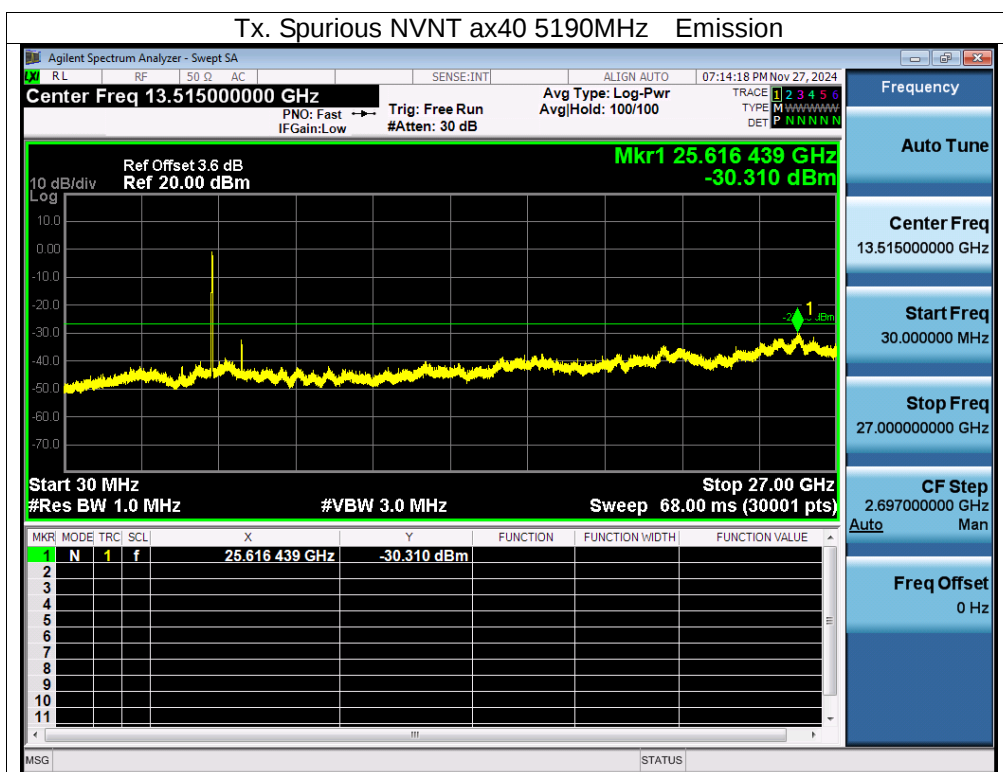


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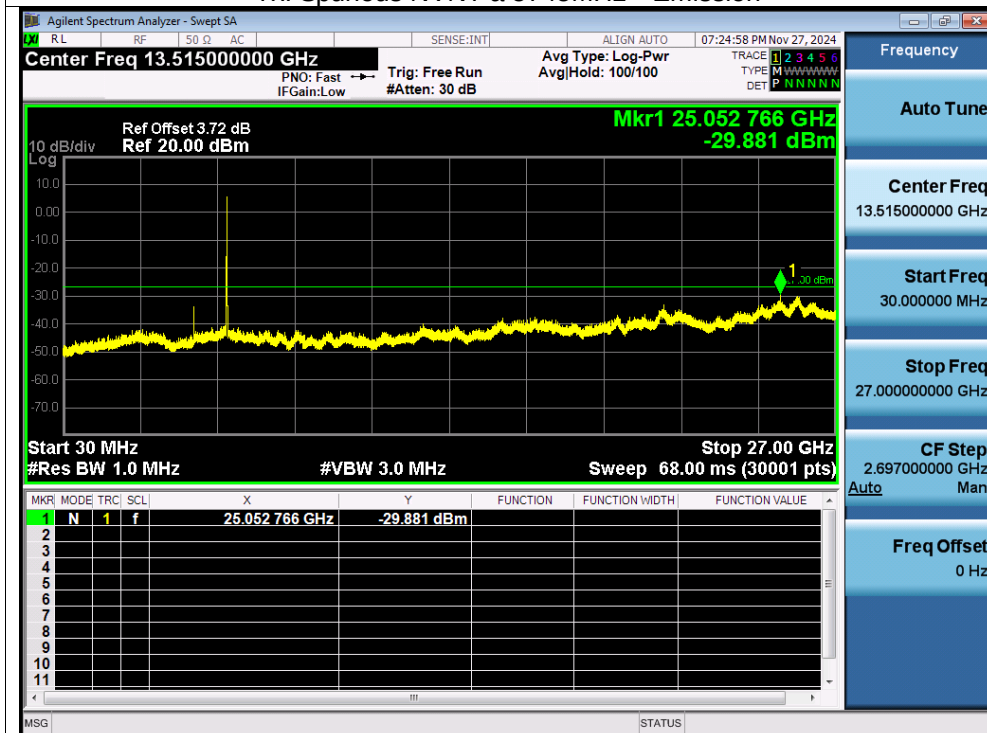
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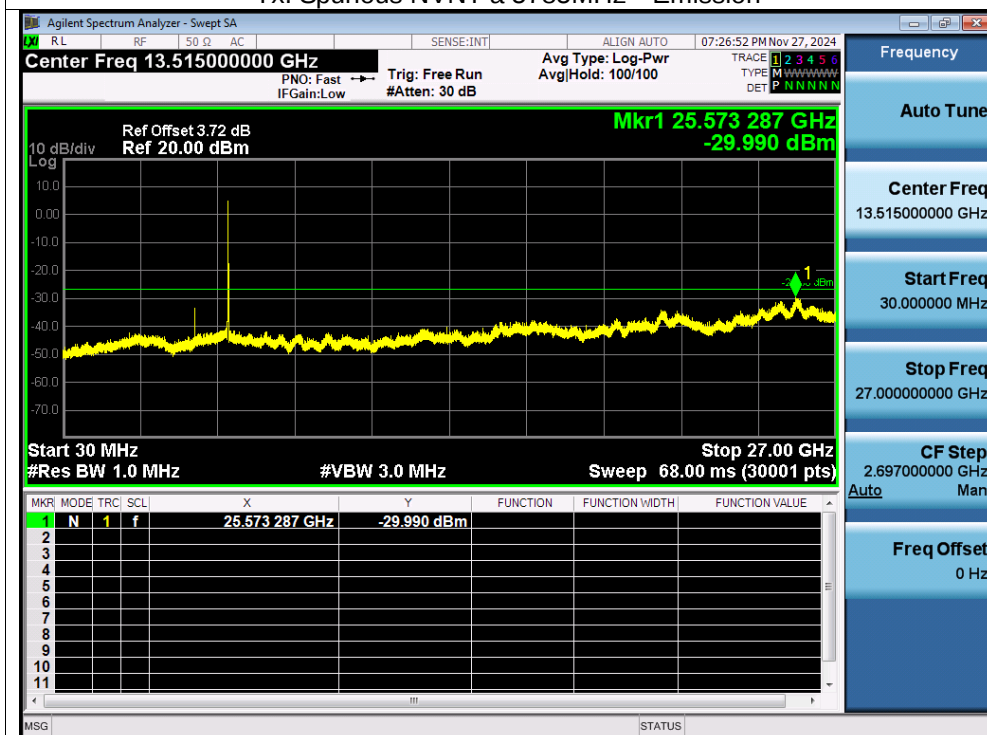


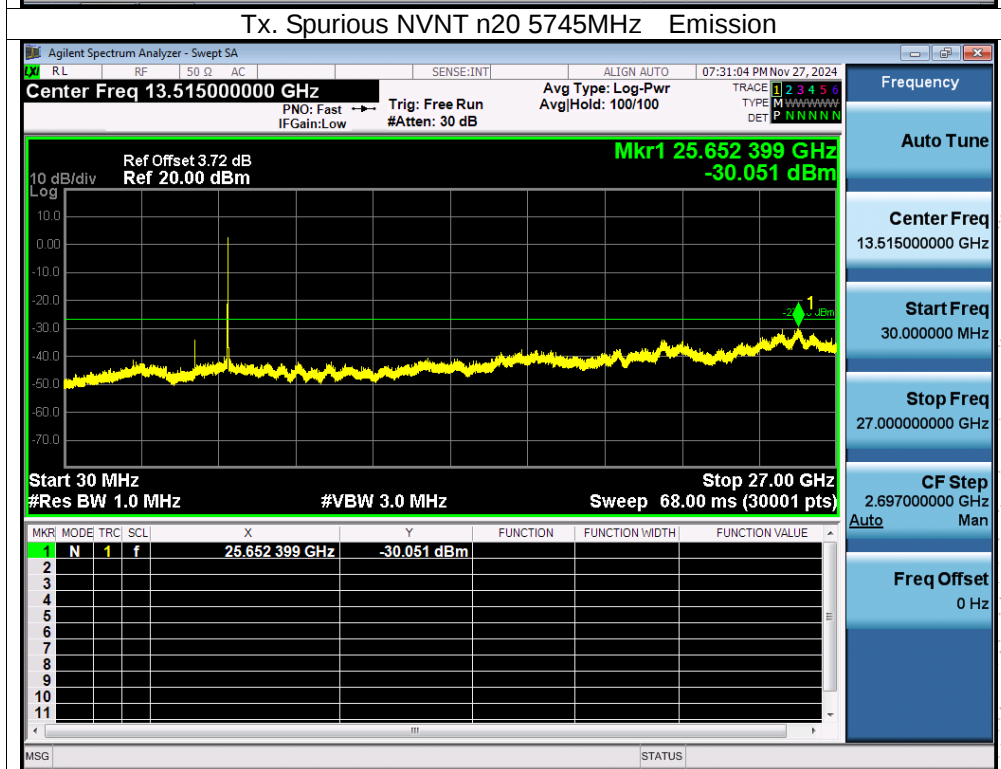
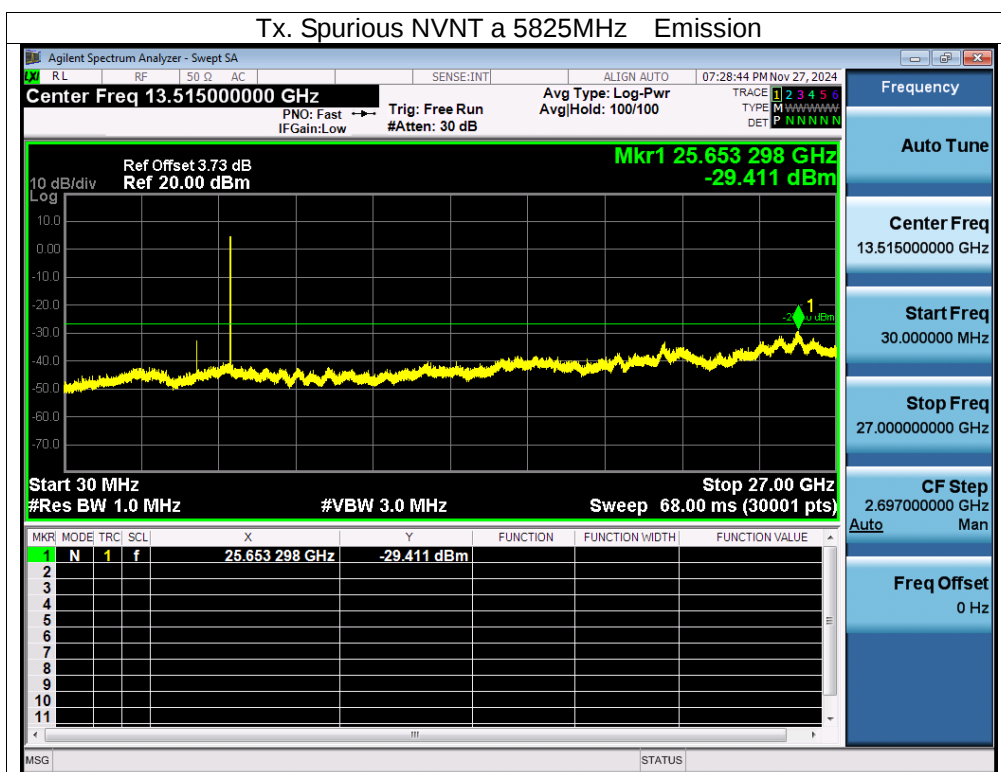
Test Graphs

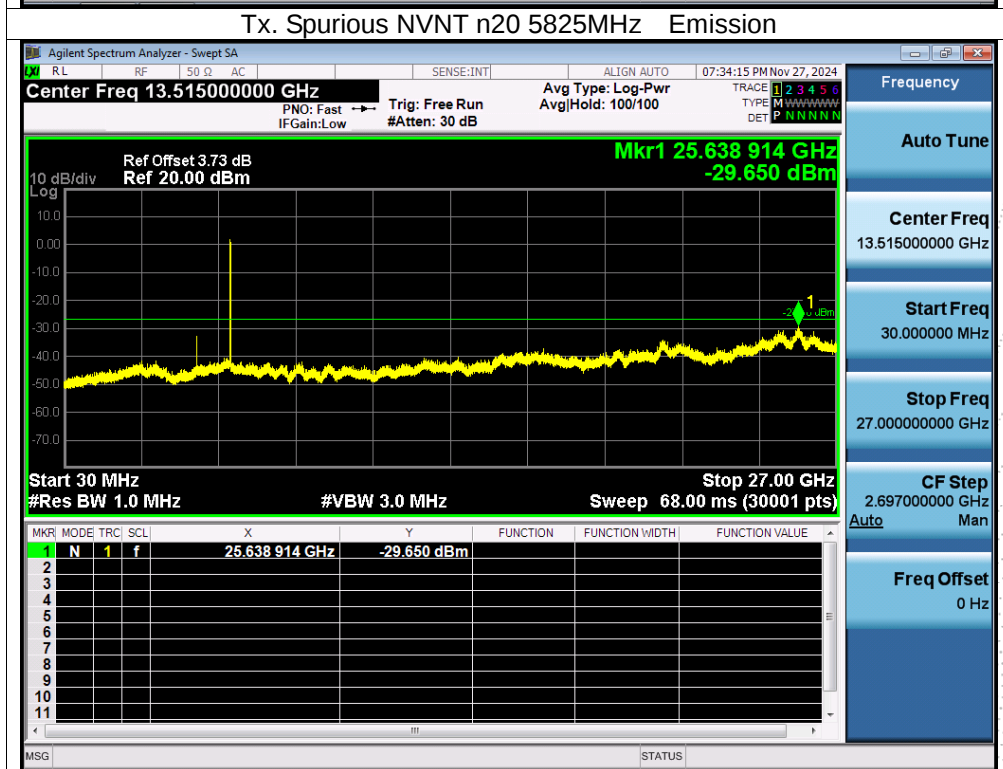
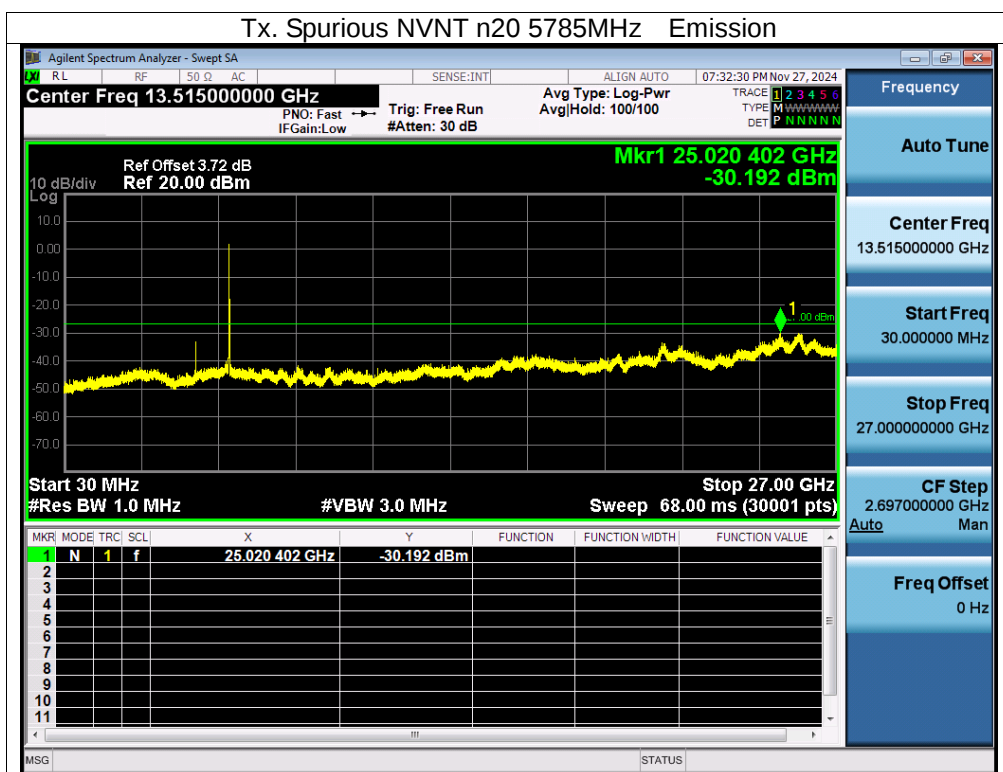
Tx. Spurious NVNT a 5745MHz Emission



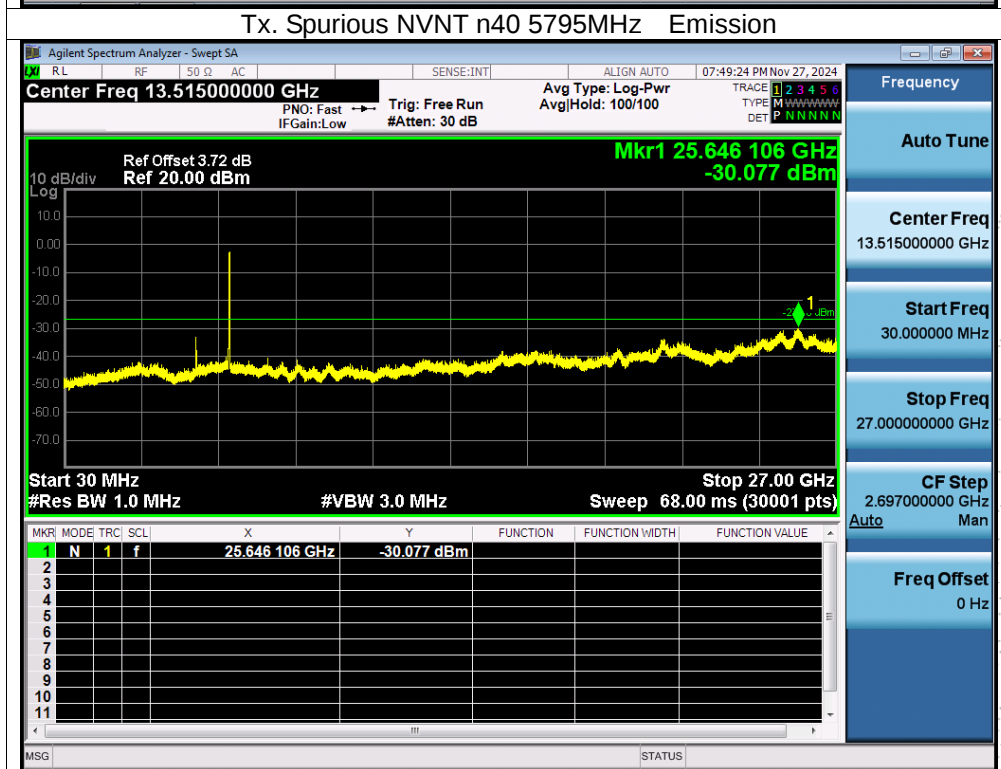
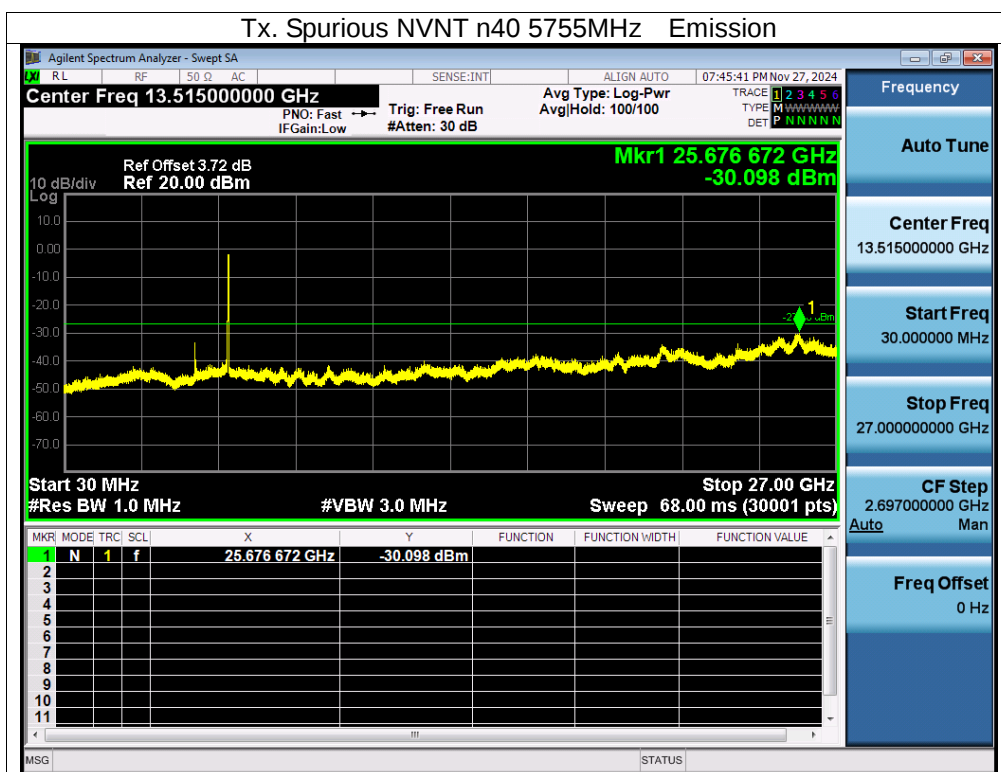
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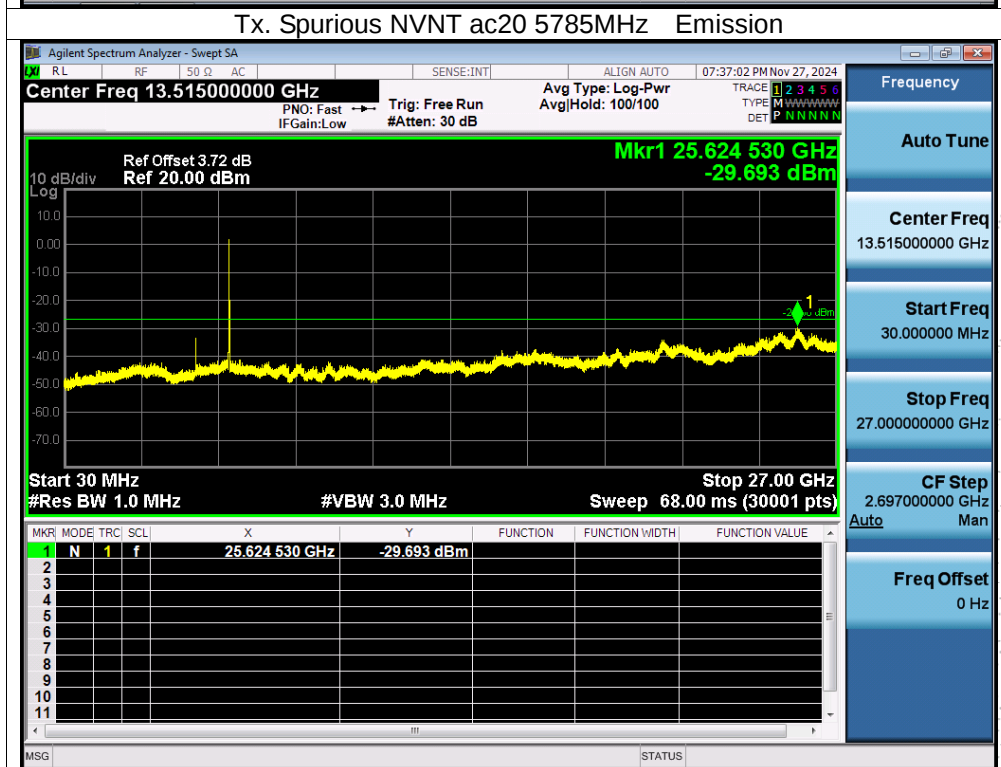
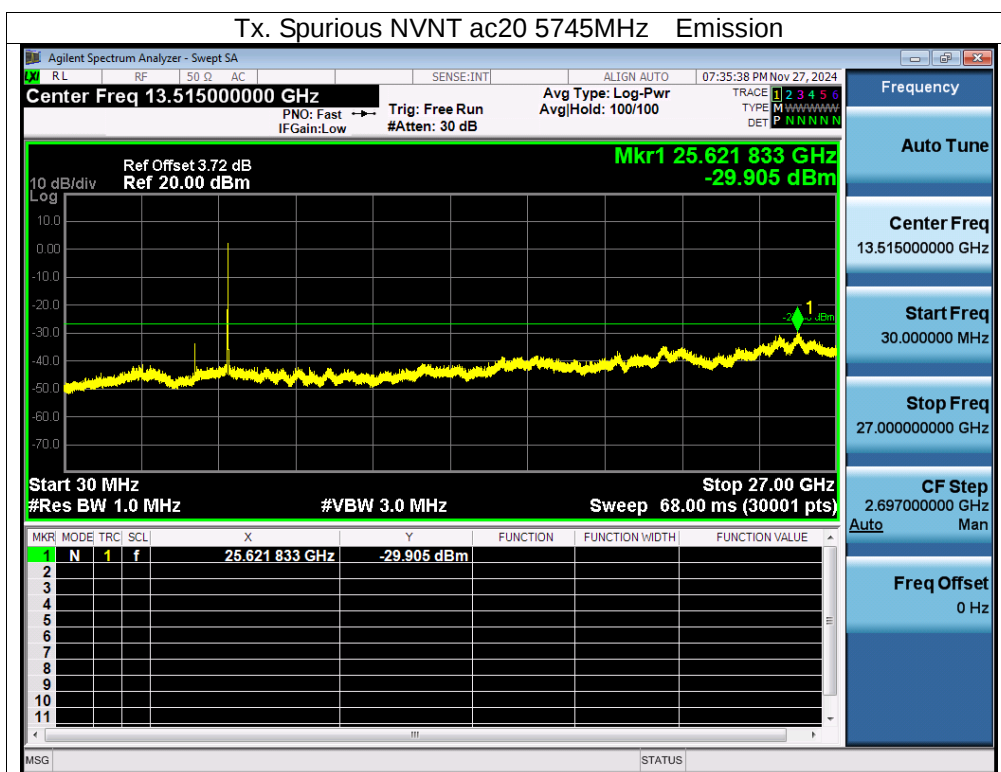


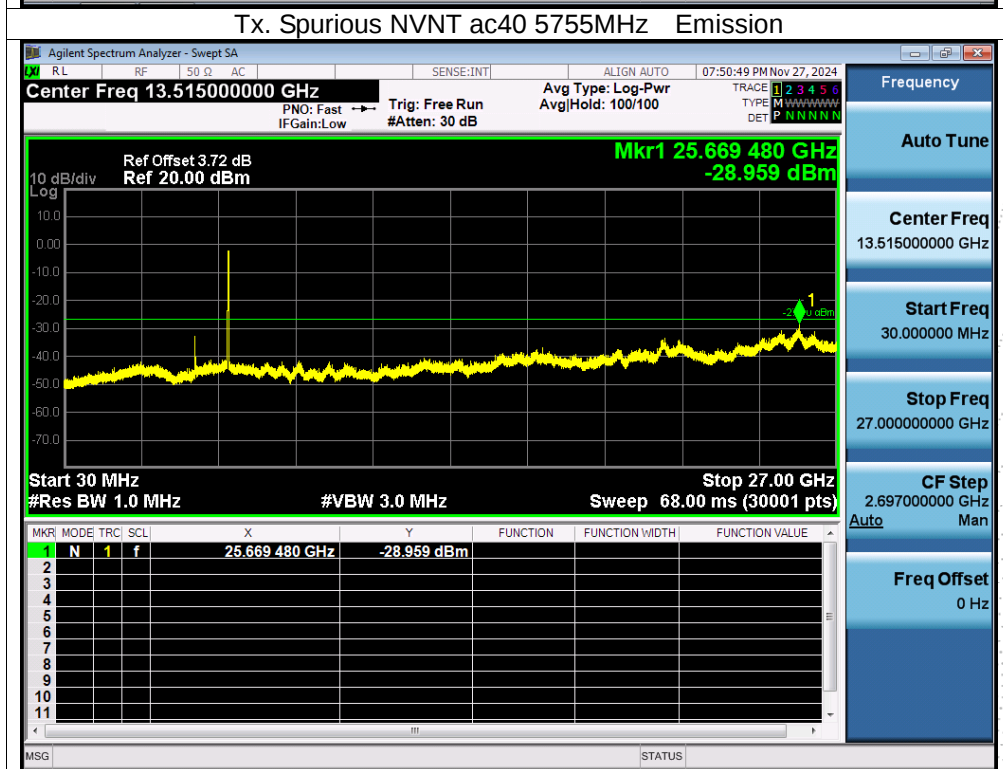
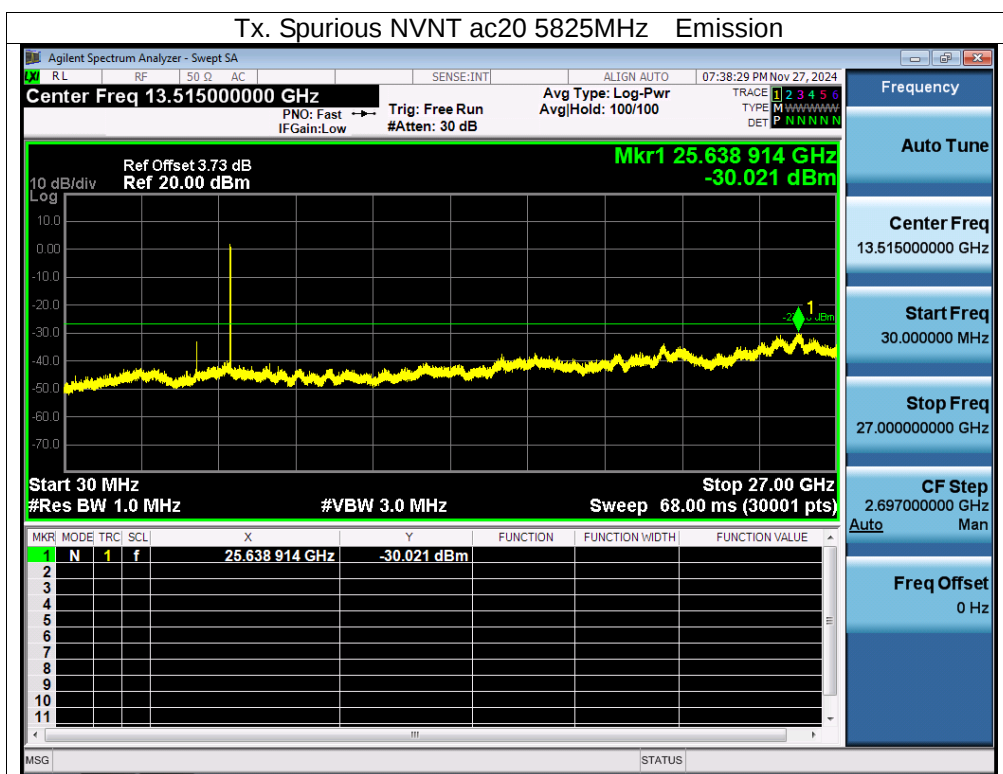


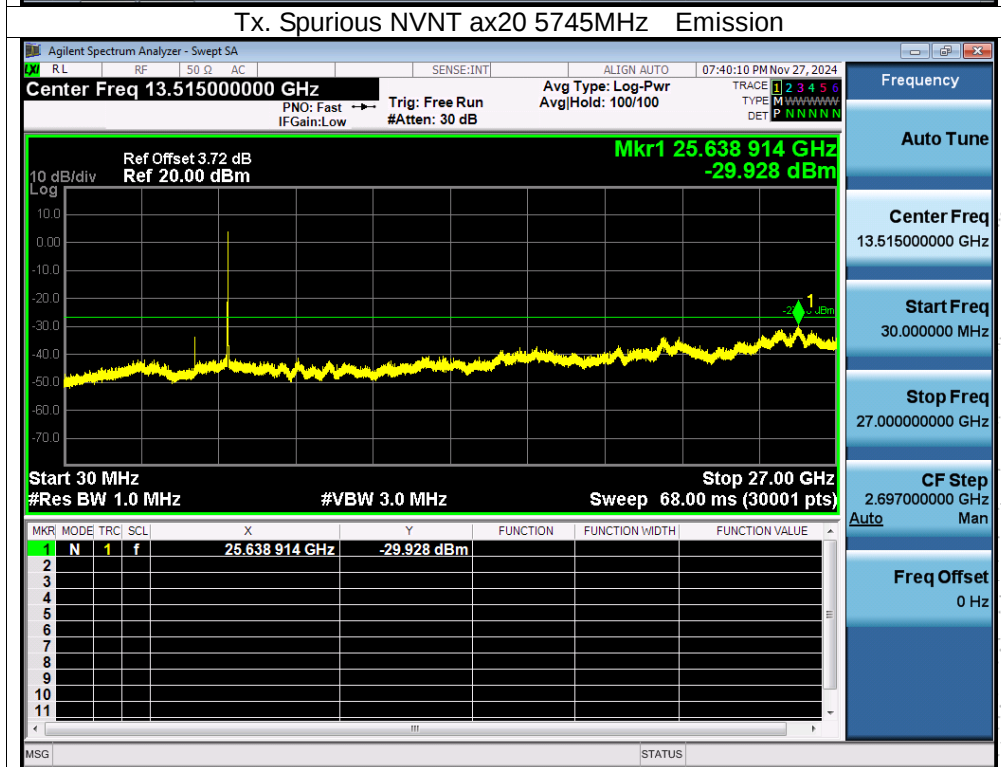
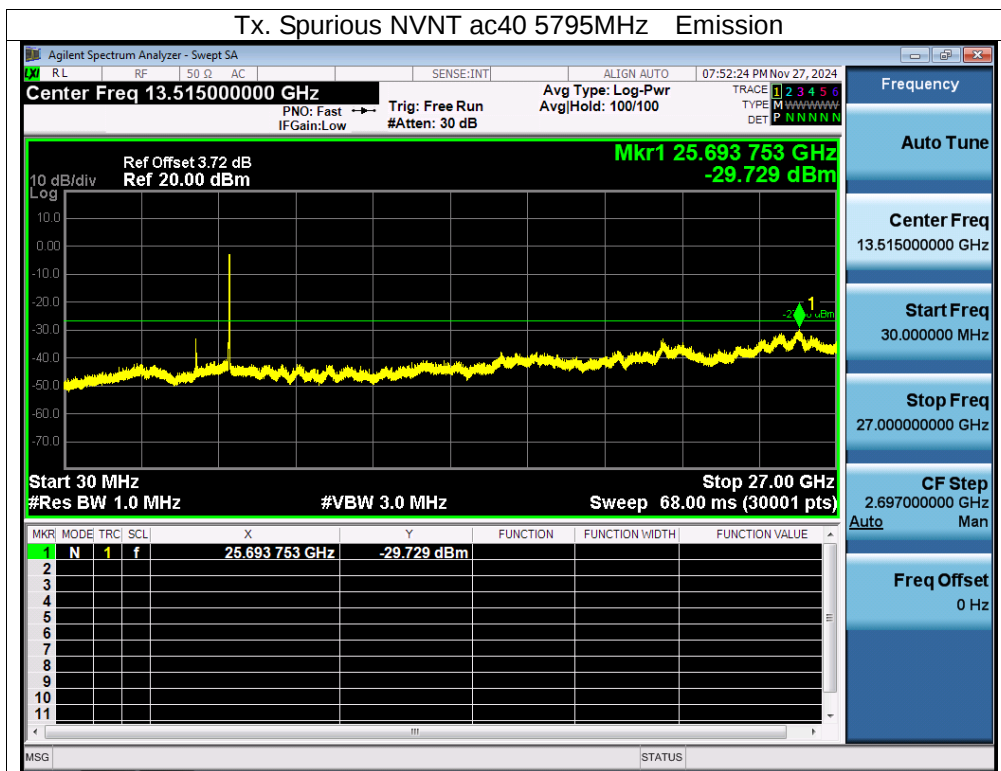
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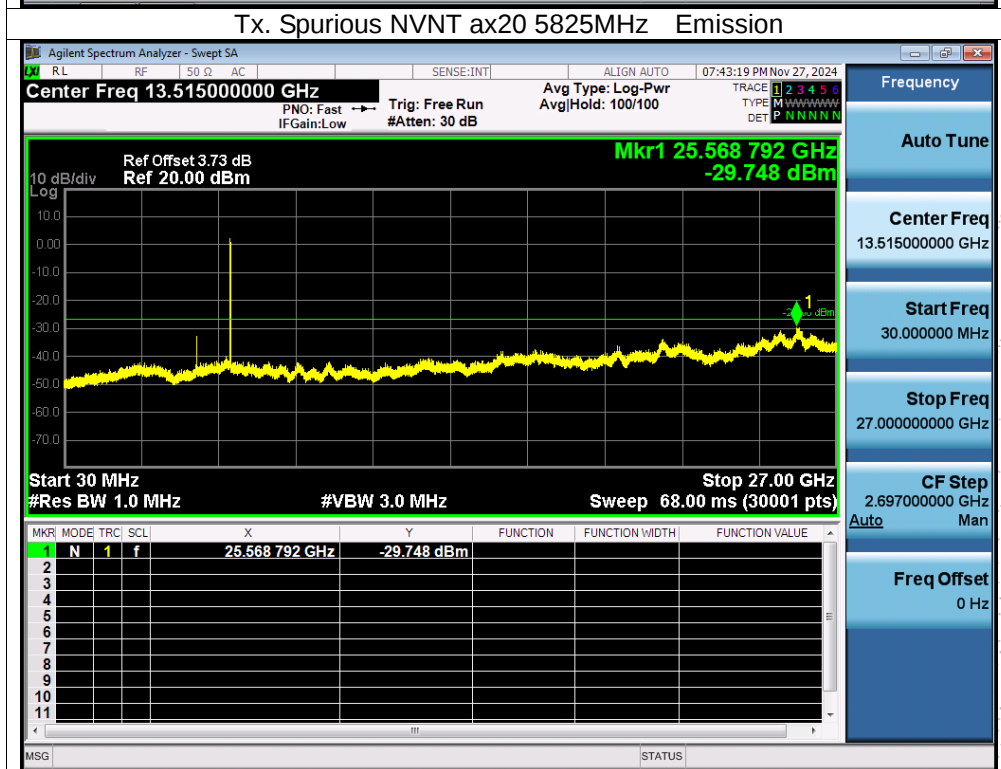
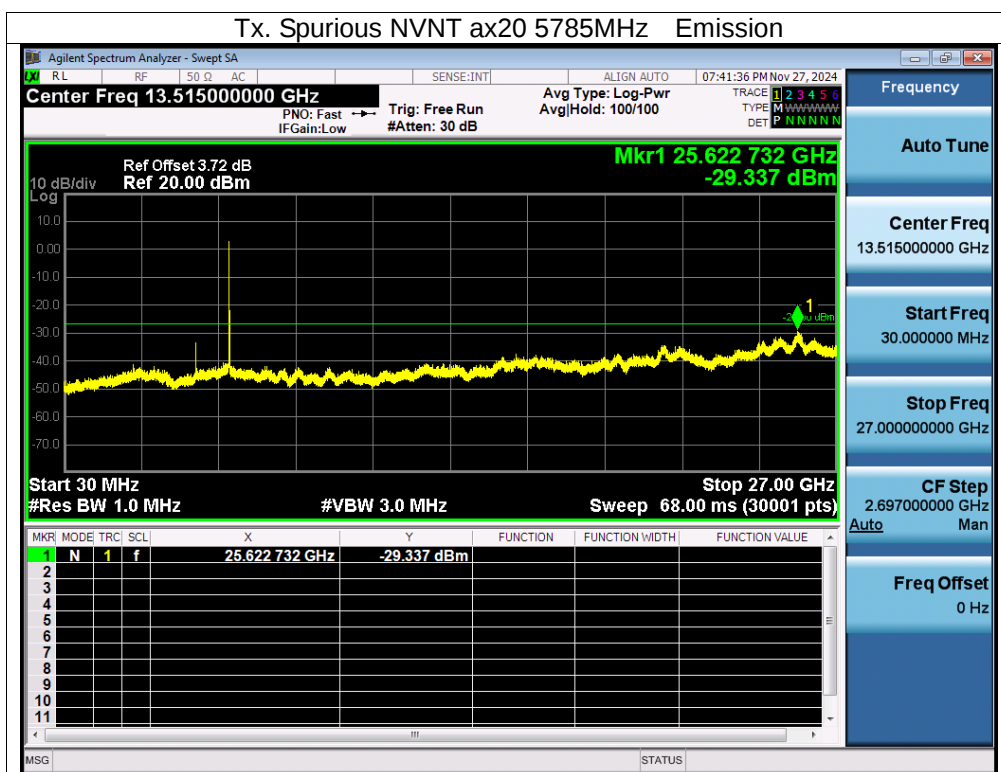


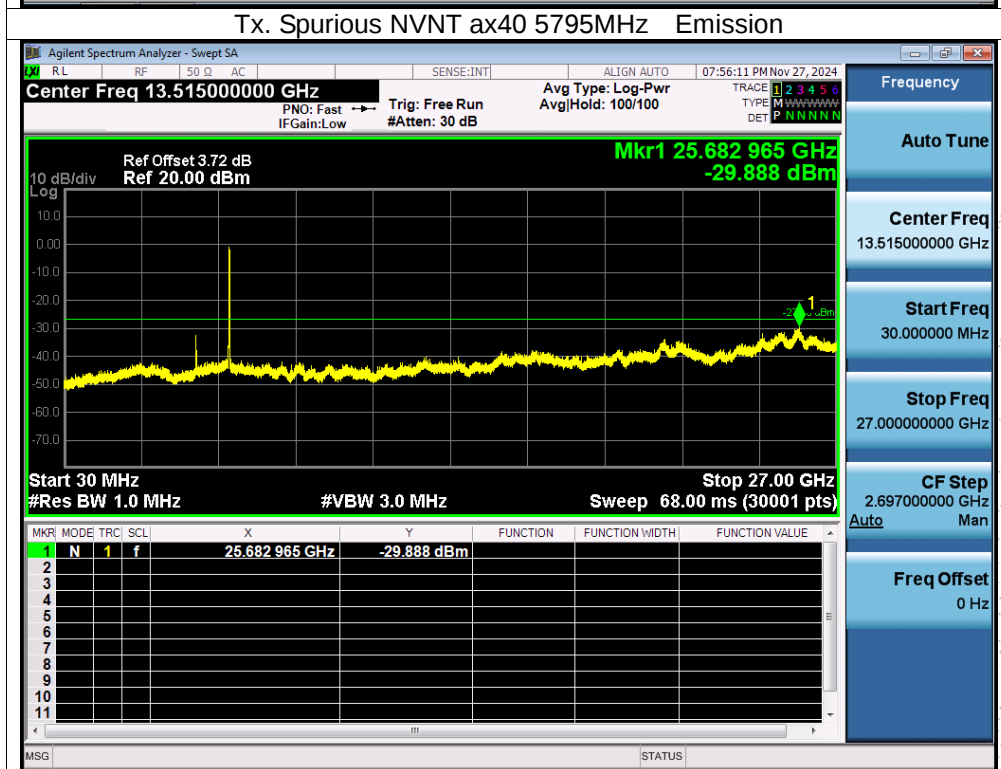
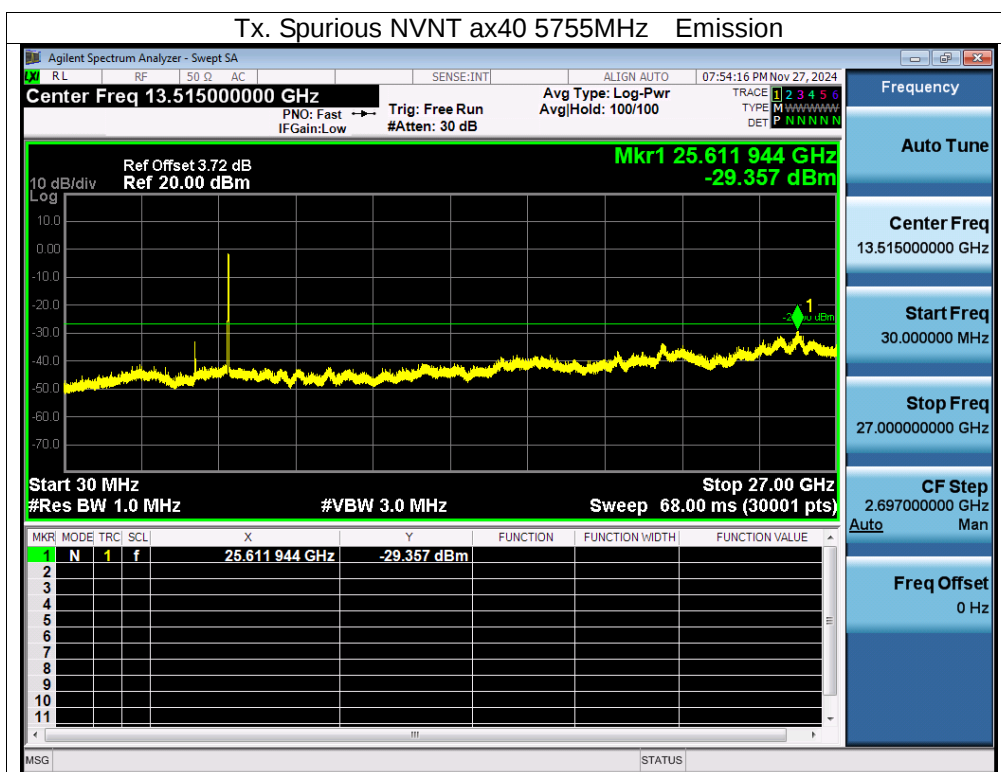
SHENZHEN







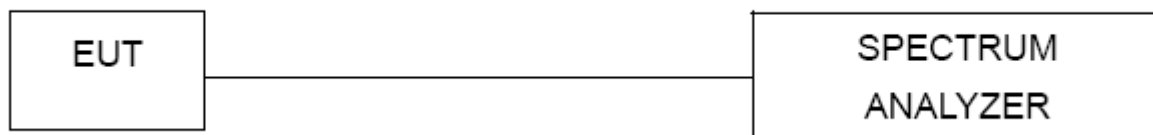




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13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

13.3 Test procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and he limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C ~ 70°C .

13.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5180.0023	5180	0.0023	0.4440
		V max (V)	138.00	5180.0133	5180	0.0133	2.5676
		V min (V)	102.00	5180.0118	5180	0.0118	2.2780
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5180.0109	5180	0.0109	2.1042
		T (°C)	-10	5180.0089	5180	0.0089	1.7181
		T (°C)	0	5180.0135	5180	0.0135	2.6062
		T (°C)	10	5180.0115	5180	0.0115	2.2201
		T (°C)	20	5180.0123	5180	0.0123	2.3745
		T (°C)	30	5180.0005	5180	0.0005	0.0965
		T (°C)	40	5180.0011	5180	0.0011	0.2124
		T (°C)	50	5180.0127	5180	0.0127	2.4517
		T (°C)	60	5180.0030	5180	0.0030	0.5792
		T (°C)	70	5180.0113	5180	0.0113	2.1815
Limits				5150-5250 MHz			
Result				Complies			

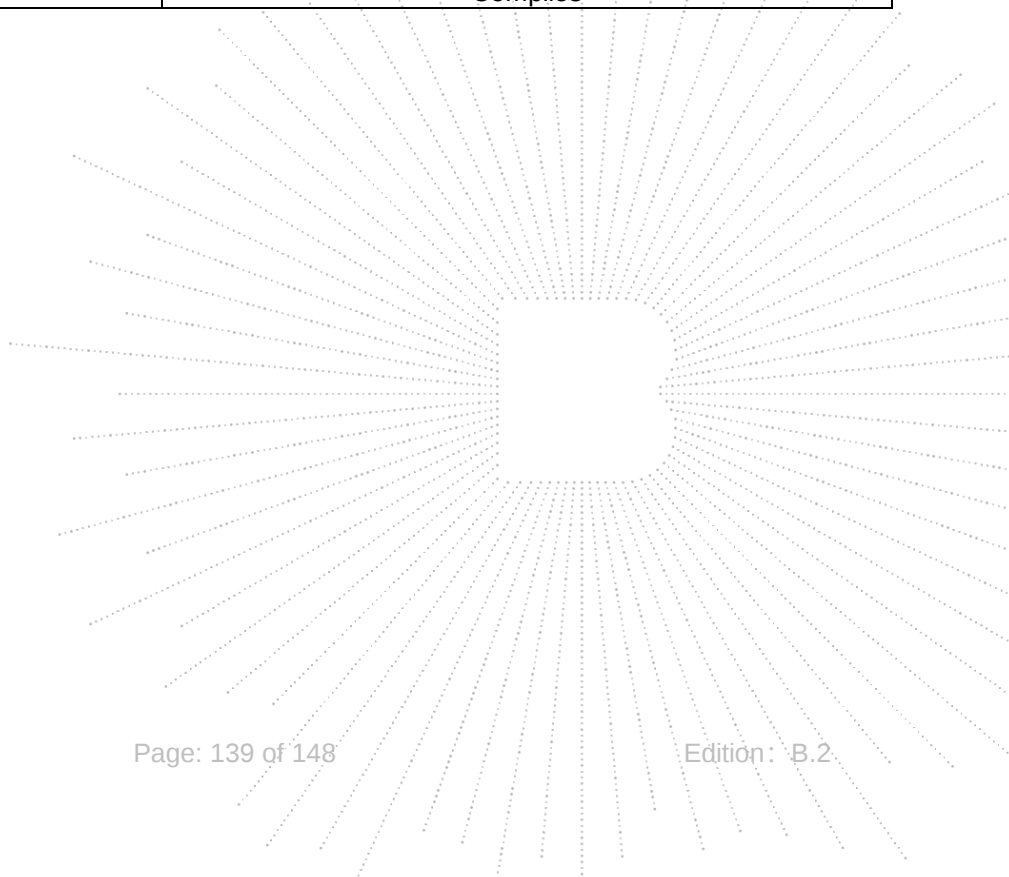
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5200.0047	5200	0.0047	0.9038
		V max (V)	138.00	5200.0078	5200	0.0078	1.5000
		V min (V)	102.00	5200.0083	5200	0.0083	1.5962
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5200.00520	5200	0.00520	1.0000
		T (°C)	-10	5200.00720	5200	0.00720	1.3846
		T (°C)	0	5200.00350	5200	0.00350	0.6731
		T (°C)	10	5200.00220	5200	0.00220	0.4231
		T (°C)	20	5200.01000	5200	0.01000	1.9231
		T (°C)	30	5200.00310	5200	0.00310	0.5962
		T (°C)	40	5200.00640	5200	0.00640	1.2308
		T (°C)	50	5200.01090	5200	0.01090	2.0962
		T (°C)	60	5200.00290	5200	0.00290	0.5577
		T (°C)	70	5200.01260	5200	0.01260	2.4231
Limits				5150-5250 MHz			
Result				Complies			

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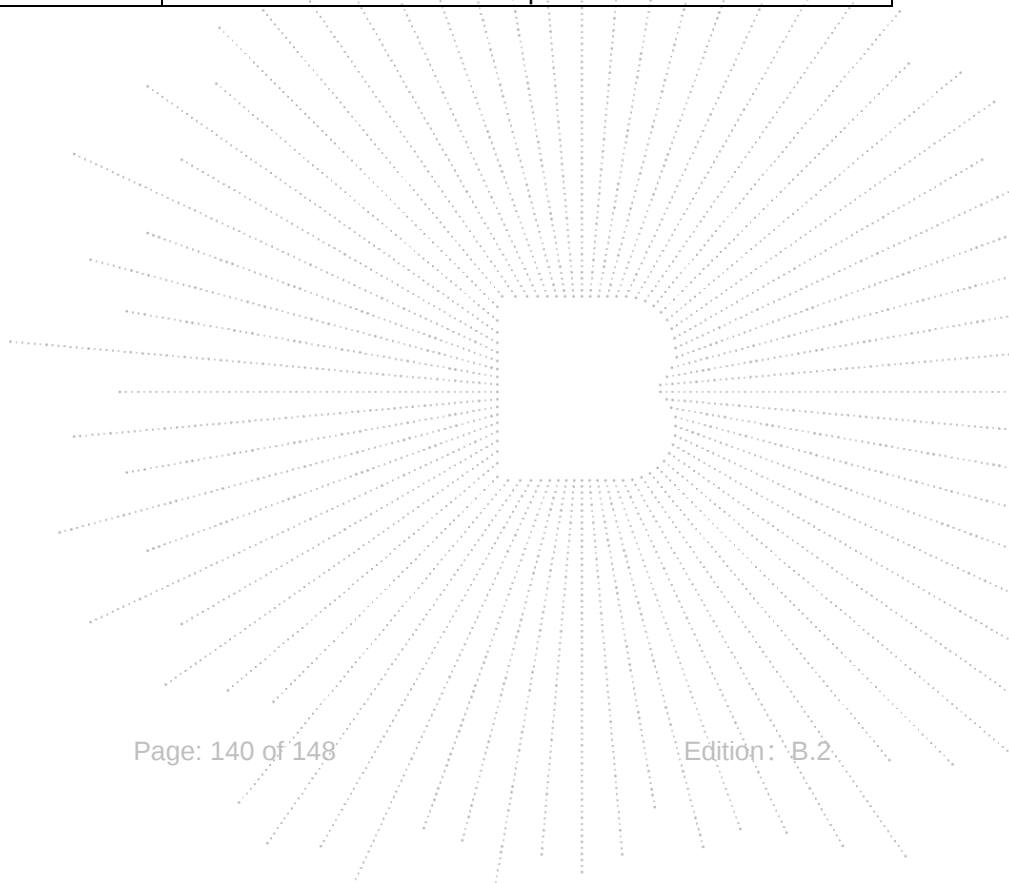
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0130	5240	0.0130	2.4809
		V max (V)	138.00	5240.0102	5240	0.0102	1.9466
		V min (V)	102.00	5240.0128	5240	0.0128	2.4427
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5240.0054	5240	0.0054	1.0305
		T (°C)	-10	5240.0012	5240	0.0012	0.2290
		T (°C)	0	5240.0005	5240	0.0005	0.0954
		T (°C)	10	5240.0051	5240	0.0051	0.9733
		T (°C)	20	5240.0051	5240	0.0051	0.9733
		T (°C)	30	5240.0032	5240	0.0032	0.6107
		T (°C)	40	5240.0019	5240	0.0019	0.3626
		T (°C)	50	5240.0101	5240	0.0101	1.9275
		T (°C)	60	5240.0119	5240	0.0119	2.2710
		T (°C)	70	5240.0090	5240	0.0090	1.7176
Limits				5150-5250 MHz			
Result				Complies			

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Temperature:	26 °C	Relative Humidity:	54%RH
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5745.01200	5745	0.01200	2.0888
		V max (V)	138.00	5745.01100	5745	0.01100	1.9147
		V min (V)	102.00	5745.00290	5745	0.00290	0.5048
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5745.00820	5745	0.00820	1.4273
		T (°C)	-10	5745.00030	5745	0.00030	0.0522
		T (°C)	0	5745.01020	5745	0.01020	1.7755
		T (°C)	10	5745.01240	5745	0.01240	2.1584
		T (°C)	20	5745.01050	5745	0.01050	1.8277
		T (°C)	30	5745.01250	5745	0.01250	2.1758
		T (°C)	40	5745.01140	5745	0.01140	1.9843
		T (°C)	50	5745.00780	5745	0.00780	1.3577
		T (°C)	60	5745.00130	5745	0.00130	0.2263
		T (°C)	70	5745.00740	5745	0.00740	1.2881
Limits				5725-5850 MHz			
Result				Complies			

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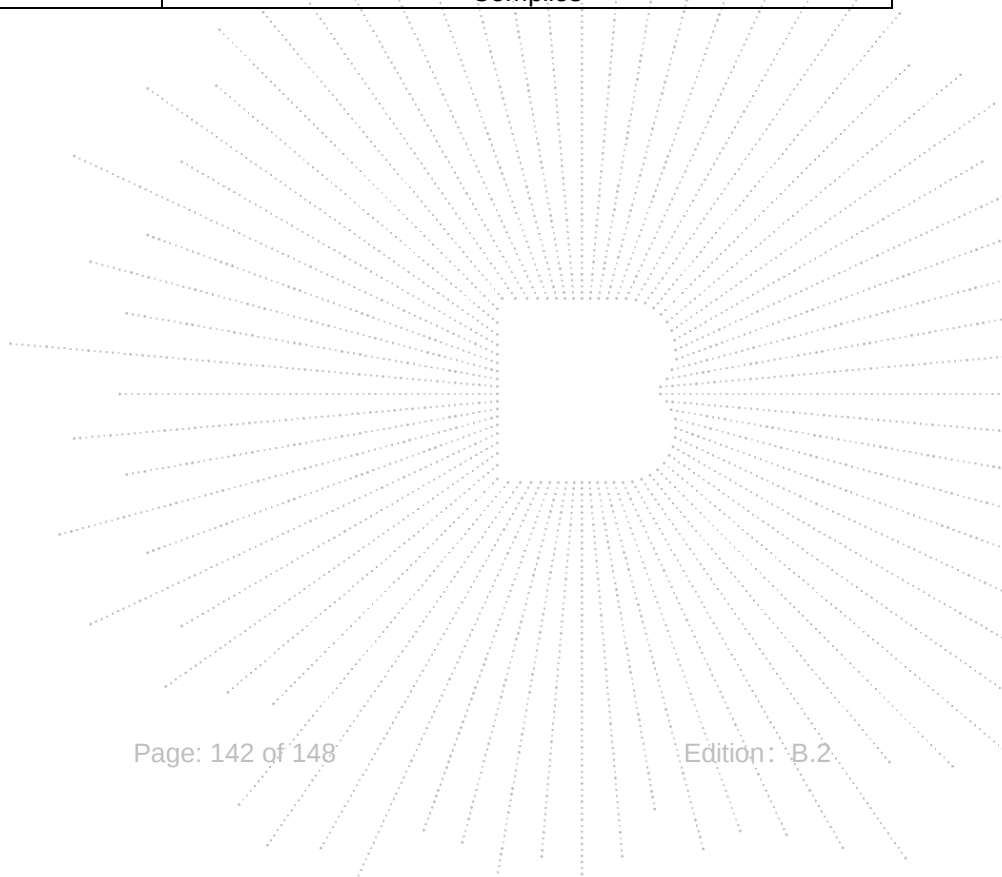
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5785.01080	5785	0.01080	1.8669
		V max (V)	138.00	5785.00510	5785	0.00510	0.8816
		V min (V)	102.00	5785.00280	5785	0.00280	0.4840
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5785.00290	5785	0.00290	0.5013
		T (°C)	-10	5785.01040	5785	0.01040	1.7978
		T (°C)	0	5785.01040	5785	0.01040	1.7978
		T (°C)	10	5785.01330	5785	0.01330	2.2990
		T (°C)	20	5785.00480	5785	0.00480	0.8297
		T (°C)	30	5785.01180	5785	0.01180	2.0398
		T (°C)	40	5785.00820	5785	0.00820	1.4175
		T (°C)	50	5785.01040	5785	0.01040	1.7978
		T (°C)	60	5785.00010	5785	0.00010	0.0173
		T (°C)	70	5785.01350	5785	0.01350	2.3336
Limits				5725-5850 MHz			
Result				Complies			

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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.00200	5825	0.00200	0.3433
		V max (V)	138.00	5825.00080	5825	0.00080	0.1373
		V min (V)	102.00	5825.00170	5825	0.00170	0.2918
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5825.01050	5825	0.01050	1.8026
		T (°C)	-10	5825.01220	5825	0.01220	2.0944
		T (°C)	0	5825.00380	5825	0.00380	0.6524
		T (°C)	10	5825.00530	5825	0.00530	0.9099
		T (°C)	20	5825.00620	5825	0.00620	1.0644
		T (°C)	30	5825.00430	5825	0.00430	0.7382
		T (°C)	40	5825.01080	5825	0.01080	1.8541
		T (°C)	50	5825.00710	5825	0.00710	1.2189
		T (°C)	60	5825.01070	5825	0.01070	1.8369
		T (°C)	70	5825.00430	5825	0.00430	0.7382
Limits				5725-5850 MHz			
Result				Complies			

SHENZHEN

14. Antenna Requirement

14.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2 Test Antenna

The EUT antenna is External antenna, antenna connector type is RP-SMA, and it is inside the EUT, fulfill the requirement of this section.



15. EUT Photographs

EUT Photo

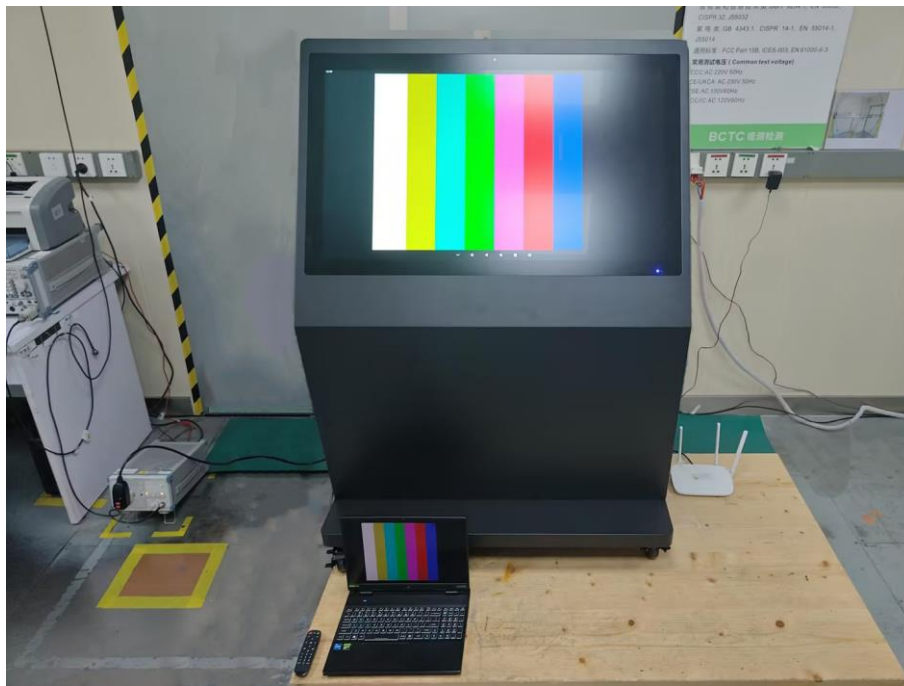


NOTE: Appendix-Photographs Of EUT Constructional Details

BCTC
BCTC
PPR
Report

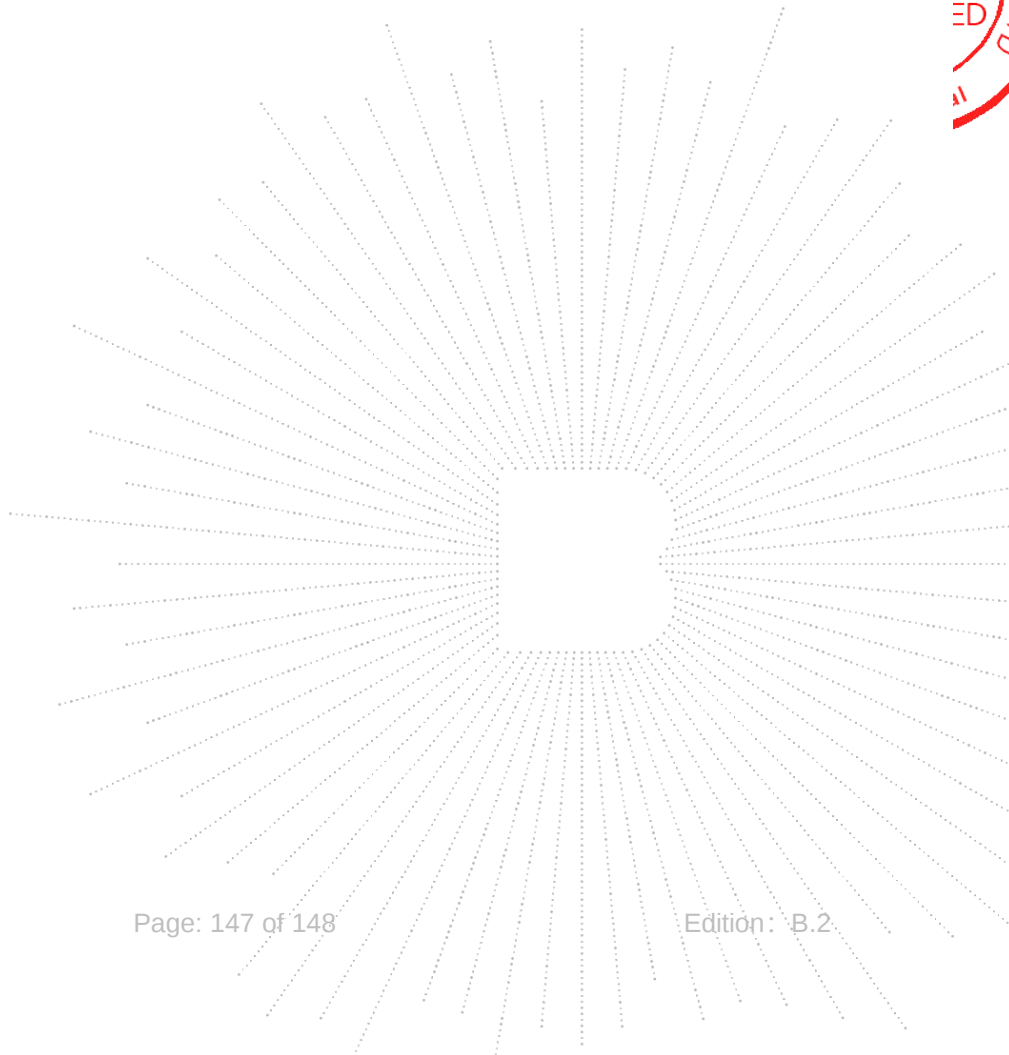
16. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos





STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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Website: <http://www.chnbctc.com>

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Complaint/Advice E-mail: advice@bctc-lab.com.cn

***** END *****